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OBSERVATIONS ON AN OLEO-RESIN FROM VENEZUELA.

By William Procter, Jr.

The substance forming the subject of the following remarks was placed in my hands by Mr. Avery Tobey, pharmaceutist, of this city, with the information that it was brought from South America by Capt. J. B. Thomas. It appears that this gentleman, during his sojourn in that region, obtained a quantity of this "native oil of laurel, or sassafras," as it is called. No accurate knowledge was obtained of its origin, further, than that the tree producing it is very large and resembles the cedar, that it grows on the banks of the river Orinoko, four hundred miles from its mouth, and that the oleo-resin is obtained by direct incision into the trunk, in the manner of extracting copaiba. It would further appear that a very high value is set on its medicinal virtues, as its exportation is prohibited. The lot brought by Capt. Thomas, cost him three dollars and a half per gallon in South America. Not many months since a notice was observed in the Journal de Pharmacie, of a very fluid oleo-resin obtained in the neigborhood of Maracaibo, and which was employed to adulterate copaiba. Is it identical with the "oil of laurel," or an analogous product? I have not been able to elicit any further information from the parties above mentioned, but believing the substance to be possessed of some interest both chemically and medicinally, hope that it may engage the attention of some person having correspondence with Venezuela.

The label on the bottle recommends the "Aceite de Sassafras," as a sudorific and diuretic in rheumatism, gout, etc., "fortifying

the internal parts." It imparts a peculiar odor to the perspiration and urine, and invigorates the nervous system. The dose is stated as from twenty to fifty drops twice a day according to circumstances.

"Oil of Laurel" has a light amber color, a penetrating persistent and peculiar odor, and an aromatic, somewhat bitter, and not very pungent taste, which perhaps may be called slightly camphorous. There is nothing in the taste or smell that reminds one of copaiba. Its specific gravity is .898. Distilled carefully *per se*, nearly the whole passes over as a very limpid colorless volatile oil, leaving a small quantity of soft, dark-brown, transparent resin in the retort. The odor of the oil is different, but analogous to that of the oleo-resin itself. When freshly obtained its smell is sufficiently like that emitted by good socotrine aloes, when breathed upon, to call it to mind. Its taste is like that of the native product. This volatile oil is soluble in all proportion in alcohol .798, and in ether, and requires but five times its bulk of alcohol .838 for solution. It mixes readily with other volatile oils with fixed oil, and chloroform, and is soluble in acetone, and pyroxilic spirit. It dissolves more than its bulk of camphor with the assistance of heat, and becomes a soft crystalline solid by cooling. It dissolves resinous bodies with facility, and its ready volatility would render it a suitable menstruum for varnishes. A hot concentrated solution of caustic potassa has no action on it; when a globule of bright potassium is put into a small quantity of the colorless oil, it has no immediate action on it, but by standing the metal becomes surrounded by a dark-brown, transparent, resinous mass, evidently indicating the presence of oxygen in the oil. This reaction, together with its ready solubility in alcohol .838, will readily distinguish the oil from recent oil of copaiba which is unaffected by potassium, and is but slightly soluble in alcohol of the sp. gr. indicated.

Dropped on powdered iodine it detonates slightly; sulphuric acid instantly changes its color to red, and when hot destroys it; and strong nitric acid acts with violence.

ON THE MEANS FOR DETERMINING THE PURITY OF CERTAIN CHEMICALS AND DRUGS, AND FOR DETECTING ADULTERATIONS.

[The importance of a knowledge of certain and decisive means for determining the purity of chemicals and drugs, to the druggist, apothecary, and physician, need hardly be averred. Impressed with this belief, the Philadelphia College of Pharmacy entertained the idea of, and appointed a committee to prepare, a small book or pamphlet of test directions for general circulation, but various circumstances have prevented that committee from accomplishing the task, which presents some difficulties and requires a considerable expenditure of time. It occurred to us that the object of the College might be gained in a less formal manner by contributions published from time to time in this Journal under the above head, without reference to any alphabetical or systematic order; and if at a future time, the College should deem it advisable, the several articles which may have been published can be arranged and republished in a more compact and systematic form. It is intended, to make the notices as complete as possible, to give the reasons for the test directions when not so obvious as to render it unnecessary, and to base them on the notes appended to substances in the Pharmacopœia when these are deemed sufficiently full to justify it. As no claims to originality are preferred by the writers of these articles, they will avail themselves of all sources of information, and in most instances without giving reference to authorities, which would swell the bulk of the articles unnecessarily. The Editor in commencing this work hopes that all who feel disposed to contribute essays towards the end in view, will freely do so.—EDITOR.]

Iodide of Potassium.—Pure iodide of potassium is in opaque white, or occasionally in transparent colorless crystals, is dissolved by its weight of cold water, and is soluble in alcohol. If diluted sulphuric acid be added to its solution in starch water, but little if any change is at first perceptible, but gradually it assumes a purplish tint, and finally after some hours becomes blue. The sulphuric acid decomposes the salt, producing sulphate of potassa, and hydriodic acid, which last is gradually decomposed into iodine and water by exposure to the air, causing the gradual coloration of the starch. If, however, any *iodate* of potassa is present, the hydriodic acid immediately decomposes it, liberating iodine, which instantly colors the starch deep blue. Bichloride of platinum causes a brownish red color when added to its aqueous solution, without any precipitation of chloro-platinate of potassium. When an excess of a strong solution of tartaric acid is added to a strong solution of the

iodide, a crystalline precipitate of bitartrate of potassa is thrown down, and the supernatant liquid gradually becomes colored as when diluted sulphuric acid is used, and from the same cause.

Chloride of barium but slightly if at all changes the solution, and proto-sulphate of iron not at all. If a whitish or greenish white precipitate should be occasioned by a solution of proto-sulphate of iron, which effervesces on the addition of a diluted acid, the iodide contains carbonate of potash, which it sometimes does to the extent of 15 per cent. or more when it has been crystallized from a saturated solution of that carbonate. In such a case turmeric paper will be colored brown by its solution, and reddened litmus paper restored to blue. If ten grains of the iodide in solution in water, be mixed with an excess of a solution of nitrate of silver, a lemon yellow precipitate of iodide of silver is thrown down, which, when washed and dried, weighs 14.1 grains if the iodide is pure, and if the precipitate be treated with solution of ammonia, the clear ammoniacal liquid should yield no precipitate when an excess of nitric acid is added. If less than 14.1 grains of the yellow precipitate is obtained, and a white precipitate falls on the addition of nitric acid as above, chloride of potassium or sodium has been present. If the precipitate by nitric acid becomes yellowish by washing, bromide of potassium was probably present. When bromide of potassium exists as an adulteration it may be detected thus: to a solution of the suspected iodide add an excess of sulphate of copper, and pass a current of sulphurous acid through the solution till it ceases to cause a precipitate of protiodide of copper; filter the liquor from the iodide of copper, add chlorine water and ether and agitate the mixture. If bromide of either potassium or sodium was present, the supernatent ether in the test tube will be colored reddish yellow. By then washing, drying and weighing the iodide of copper, the amount of iodine, and from this, of iodide of potassium present, can easily be ascertained by calculation, as 10 grs. of pure iodide of potassium should yield nearly 11.5 grs. of iodide of copper.

When nitrate of soda, nitrate of potassa, or other salt not acted of by nitrate of silver or ammonia, is present, the fact will be indicated by the iodide of silver test above, not indicating the full amount of iodide, and no precipitate being yielded by nitric acid from the ammoniacal washings of the iodide. Water may exist to the extent of several per cent, especially if carbonate of potassa

be present. Bromide of potassium produces no precipitate with bichloride of mercury which will indicate this salt when sold as iodide.

Bitartrate of Potassa. *Cream of Tartar.*—Bitartrate of potassa has been adulterated with *chalk, tartrate of lime, quartz sand, clay, saltpetre, alum, sulphate of potassa, chloride of potassium, flour,* andperhaps other substances. Commercial cream of tartar generally contains a little tartrate of lime not intended as an adulteration. When pure, cream of tartar is soluble in 184 parts of cold and 18 of boiling water, and is insoluble in alcohol. When, therefore, five grains of it is agitated with two fluid ounces of distilled water, there will be a slight crystalline residue after time enough has elapsed to saturate the water, if the salt is pure. If the solution is complete and quickly effected, the presence of a more soluble salt may be suspected, if an opaque residue is left, one or more of the insoluble adulterations are present. Any sulphate present may be detected by adding nitrate of baryta to the aqueous solution of the suspected cream of tartar, and treating the precipitate with nitric acid, when an insoluble sulphate of baryta remains. Chloride of potassium is detected by nitrate of silver which produces a white flocculent precipitate insoluble in nitric acid. Any insoluble matter will be left when the salt is heated in 20 parts of water to ebullition, and under such circumstances flour, if present, will be indicated by iodine which colors the liquid blue.

Nitrate of Potassa.—Saltpetre has been adulterated with *sulphate of potassa, chloride of sodium,* and *nitrate of soda.*—Sulphates are detected by nitrate of baryta, which precipitates sulphate of baryta insoluble in nitric acid. Chloride of sodium and potassium are indicated by nitrate of silver, which forms with them chloride of silver insoluble in nitric acid and soluble in solution of ammonia. To prove the purity of the nitrate from nitrate of soda, weigh 100 grains, add to it 60 grains of sulphuric acid in a deep platina or porcelain crucible covered to prevent loss during the desiccation of the salt, and keep it at a red heat till it ceases to lose weight. The residue should weigh 86 grains. If less than this, and chlorides and sulphates are absent, the saltpetre probably contains nitrate of soda.

Bicarbonate of Soda.—Bicarbonate of soda is extensively used both in medicine and for culinary purposes in connection with tar-

taric acid or cream of tartar as an agent for raising bread and cakes. Its most usual impurity is *carbonate of soda*, arising from the imperfect saturation with carbonic acid. When present, the carbonate gives a decided alkaline, disagreeable taste, and if in the amount of one to three per cent, will afford a white precipitate by sulphate of magnesia, and a reddish brown one by corrosive sublimate. Heated to redness for fifteen minutes it loses 37 per cent, and when decomposed with sulphuric acid in a flask, it should lose about half its weight of carbonic acid. Sulphate of soda may get in this salt by using a carbonate contaminated with that salt in making the bicarbonate of soda. It is indicated by nitrate of baryta yielding a precipitate insoluble in nitric acid. Chlorides are detected by nitrate of silver. The great cheapness of bicarbonate of soda is one reason that it is less adulterated than many others, as no salt not detected by taste or insolubility is sufficiently cheap to use for this purpose.

Carbonate of Soda.—Carbonate of soda when designed for medical use, should be examined as to its quality. When intended for the physician it is best to select the well defined flat rhombic crystals, which are more certainly pure than the irregular masses.—When sulphate of soda and chloride of sodium are present, (they are the most usual impurities,) they are indicated by dissolving the carbonate in pure diluted nitric acid to saturation, and adding nitrate of baryta or nitrate of silver. As carbonate of soda contains 63 per cent of water which it partially loses with great readiness by efflorescence, attention should be given to this fact in using it in chemical recipes, and in prescriptions.

W. P., Jr.

THE PHARMACOPŒIA OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS, IN IRELAND, 1850. Dublin: Hodges & Smith, Grafton Street, Booksellers to the University. pp. 191, octavo.

The last edition of the Dublin Pharmacopœia was published in 1826. Three years ago the College of Physicians, of Ireland, deeming it proper that the work should be revised and brought up to the present state of Materia Medica and Pharmacy, commenced

its revision, and have pursued it steadily until their labors were complete in the publication of the volume before us.

The most obvious change, which at once strikes the reader, is the abandonment of the Latin, except in the Materia Medica list and the names of preparations; in which course it has followed the Edinburgh Pharmacopœia, and both of them the United States Pharmacopœia, which was the first work of the kind published by authority in English.

In glancing over the list of the Materia Medica we are reminded that we are not looking in our own Code, by the want of simplicity in the nomenclature. The botanical names of plants in many instances are placed in the list precisely on a par with shorter officinal names for the part used. Thus, "ARCTOSTAPHYLOS UVA URSI" is translated "Bearberry. *The leaves*;" whilst further on we find "UVA URSI," which is referred to "Arctostaphylos."

"COLCHICUM AUTUMNALE" is the designation for the "cormus and seeds" of the plant. The tincture is called "Tinctura Seminum Colchici."

"SUCCINUM. Amber. *The oil obtained by its destructive distillation.*" Why not at once call it Oleum Succini? "℞. Succini" will mean "Take of Oil of Amber," or Take of Amber, and lead to confusion. Rectified oil of Amber is not mentioned.

We will not occupy space, however, in pointing out the peculiarities of the *List*; after all, it is greatly a matter of opinion. We think a simple nomenclature facilitates the prescriber's office, is more easily remembered, and is less likely to cause errors; and, moreover, is much more harmonious to the ear and eye. The revisors have adopted the botanical names for plants given in Lindley's Medical and Economical Botany," giving also his authorities.

As regards the correctness of these references we have not had time to be critical, nor do the revisors appear to have given any great amount of attention to this department of the work. There is a want of uniformity in the phraseology of the formulæ, and a wide departure from the former brevity of the Latin, in many instances. We think the latter an improvement, because it renders the meaning of the directions clearer and less liable to be misunderstood. The affix "of Commerce" is frequently applied, and is intended to point out the distinction between the purer prepara-

tion of the pharmacopœia, and the ordinary commercial article. In no instance has the English translation of the Latin name of a preparation been directly given; and it is only when one preparation is used in forming another that we can get at the rendering. The nomenclature of the preparations has been greatly simplified, and in our opinion improved, in the present edition. We do not find a single note of test directions in the book, either attached to the chemical articles in the Materia Medica list, or to those among the preparations. It may be that the revisors deem a commentary a fitter place for these useful directions, than the Pharmacopœia itself; but we decidedly prefer to have them in the latter.

WEIGHTS AND MEASURES.—Perhaps the most radical change which will be found in this work has reference to the system of weights. The entire troy standard has been dropped, with the exception of the *grain*, and the avoirdupois pound and ounce adopted. The ounce is sub-divided into *eight* parts called drachms, the *drachm* into *three* scruples, each of which is valued at 18.22 grs. troy. By this change the weights for buying selling and mixing are the same, and one fruitful source of error in compounding done away—assuming that the new system is adopted in practice. Nothing is more usual than to find beginners, and often the more experienced, confounding the troy and avoirdupois weight in weighing the lesser and greater quantities in officinal formulæ and even in prescriptions.

The Imperial gallon and its divisions down to the minim have been adopted, so that in fluid measures the three British Codes are alike. As the imperial gallon contains exactly 160 avoirdupois ounces, and as it contains also 160 fluid ounces, it follows that there is a common relation between the weights and measures. This affords a means of arriving at the weight of any measure of liquid of known specific gravity, as all that is necessary is to multiply the measure by the specific gravity, to get the weight of the liquid. Thus, 11.5 fluid ounces of proof spirit weighs $11.5 \times .92 = 10.88$ ounces avoirdupois. The innovation not extending to the grain weights, renders the drachm and scruple "not multiples of a grain by integer numbers," hence the minim and grain have a different signification, the minim of water weighing $\frac{911}{1000}$ gr.

In order to obviate, as far as possible, the inconvenience of a sudden change of weights in the pharmacy of Ireland, Mr. Dono-

van, of Dublin, has undertaken to supply, at a moderate cost, the Apothecaries' officinal weights.

Abstractly we are by no means inimical to this change in the system of weights—it is a return to the old system, prior to 1720, and which never should have been forsaken; and in a country like Ireland, we see no reason why its adoption should not be practicable; at the same time we doubt the policy of the change in view of the continued use of the Troy standard in the other British and the United States Pharmacopœias.

The classification of the preparations has been altered in many respects. Salts are placed under their generic names instead of that of their metallic bases, except the Chlorides, Iodides, and the Alkaloid Salts, the whole being arranged in an alphabetical order; thus: *Acetates*, *Acids*, *Alkaloids* and their salts, *Arsenites*, *Carbonates*, *Chlorine* and its metallic compounds, *Citrates*, *Clysters*, *Confections*, *Decoctions*, *Ethers*, *Extracts*, *&c.*, *&c.*, the headings of each class being in English terms.

We will now run over the preparations, and note some of the novelties that may present.

Solution of sub-acetate of Lead.—This preparation is made from acetate of lead and litharge, as in our own Pharmacopœia; but is rather more than one half the strength of our solution. The diluted solution, or lead water, is about the strength of the United States preparation.

Acetate of Zinc is prepared from acetate of lead and metallic zinc, as in the U. S. P.

Acidum Aceticum Glaciale is prepared from acetate of lead, dried at 300° F., and muriatic acid gas; and not from acetate of potassa as before. The powdered kiln-dried acetate contained in a flask, is exposed in an atmosphere of the acid gas until the acetic acid is displaced, (which is known by the general dampness of the acetate,) when the flask is attached to a Liebig's condenser, and by means of a chloride of zinc bath, the acetic acid is distilled over.

Acidum Aceticum forte is made with 6 parts of the preceding acid, and 4 parts of distilled water.

Acidum Aceticum e ligno venale has been placed in the List, and means the commercial (No. 8) acetic acid. This is used in making the *diluted acetic acid*.

Acidum Benzoicum is prepared by Mohr's process.

Acidum Gallicum has been introduced, and two processes given for its preparation. The first by atmospheric action on moistened powdered galls, the other by the action of sulphuric acid on a strong infusion of galls.

Acidum Hydrocyanicum Dilutum.—This acid is directed to be prepared by mixing two ounces of ferrocyanide of potassium dissolved in 8 ounces of water, with one fluid ounce of oil of vitriol diluted with four ounces of water, and the mixture distilled from a retort or matrass, using a Liebig's condenser, until eight ounces be distilled over. The distillate is then diluted with as much distilled water as will make the whole measure sixteen fluid ounces. The specific gravity of the product is said to be .997.

We consider this formula decidedly faulty, and calculated to yield a product of uncertain strength. No water is placed in the receiver to absorb the first vapors, rich in hydrocyanic acid, and which, if the apparatus is not very tight, and the refrigeration very complete, will be lost. No check is given to regulate the strength of the final product, it being assumed that the first eight ounces will always contain the same amount of real acid. Specific gravity, where the liquid varies only .003 from the standard of comparison, is too uncertain a criterion, and we are surprised that the saturating power of the acid in reference to nitrate of silver, should have been omitted. The uncertainty of this process has been practically illustrated in the Pharmaceutical Journal, November, 1850.

Acidum Nitricum Purum.—The strength of this acid is 1.5.

Morphia is prepared by Gregory & Robertson's process.

Acetate of Morphia.—Alcohol is substituted for water in this formulæ. We presume the object is to effect the evaporation with less injury to the salt.

Morphiæ Acetatis Liquor contains 4 $\frac{1}{16}$ grs. to a fluid ounce of weak spirit.

Morphiæ Muriatis Liquor contains 4¼ grs. to a fluid ounce of weak spirit.

Quinæ Murias is officinal, and made by double decomposition between sulphate of quinia and chloride of barium.

Strychniæ Murias has been introduced.

Ferri Carbonas Saccharatum has been introduced from the Edinburgh Pharmacopœia.

Magnesiæ Carbonas Ponderosum is officinal.

Sodæ Bicarbonas, is prepared in the old way by passing a current of carbonic acid into a solution of the carbonate.

Zinci Carbonas is prepared by double decomposition between chloride of zinc and carbonate of soda.

Calcis Chlorinatæ Liquor is a solution of half-a-pound (av.) of chlorinated lime in half-a-gallon (imp.) of water.

Calomelas is the name for calomel.

Sublimatum Corrosivum is the name for corrosive sublimate.

Zinci Chloridi Liquor is a solution of the salt of sp. gr. 1.593.

Decoctions.—In these preparations the quantities, with six exceptions, are but half a pint, and with two exceptions the length of the ebullition is but ten minutes. This is a decided change for the better. If time is expended on these preparations, it would be better to precede a short period of ebullition by cold maceration.

Ether Sulphuricus.—In this formula quick lime is used instead of caustic potassa, in freeing the product from sulphurous acid, previous to its rectification.

Spiritus Ethereus Oleosus.—Under this name Hoffman's anodyne is known in the new code. In the Pharm. 1826 the process for its preparation was exceedingly defective—it merely directed the residue left in making sulphuric ether to be distilled until a black froth commenced to rise in the retort without any subsequent treatment of the distillate. In the formula of 1850, a pint of rectified spirit is acted upon in a retort with a pint and a half of sulphuric acid until the rising of the black froth renders it necessary to stop the distillation; the distillate is exposed for twenty four hours till the ether has evaporated, when it is washed with a little water and introduced into a bottle containing 10 fluid ounces of alcohol, and 5 fluid ounces of ether. This process is therefore a combination of those for oil of wine and compound spirit of sulphuric ether, and is a great improvement on the one of 1826.

Extractum Aloës Aquosum, is a useless preparation made by boiling hepatic aloes in 10 parts of water till dissolved, exceptthe dregs, and evaporating.

Extractum Cannabis Indicæ Purificatum is an alcoholic extract of an alcoholic extract! If the substance treated was ever good, the

treatment does not improve it, and if bad it does not render it better, unless it has been adulterated. These two processes recall to mind the often quoted epigram:

> "The king of France, with twenty thousand men,
> Sailed up the Scheldt—and then sailed down again."

Extractum Colchici Aceticum is directed to be made by digesting four ounces of the dried root in eight fluid ounces of dilu ed ace ic acid for fourteen days, then filter and evaporate to a soft extract by means of a water-bath! We have strong doubts whether the extract would be forthcoming by this treatment, as 4 oz. of colchicum root will, if we mistake not, retain nearly the whole menstruum by imbibition, and no direction is given to express, or to displace.

Extractum Rhei, is made with six parts of water, and when done is but little stronger than the root from which it was made. Diluted alcohol yields a much more efficient extract.

Extractum Sarsaparillæ Fluidum, the only fluid extract, is made by acting on the root with 8 parts of water at 212° in two successive operations, evaporating to a thin syrup and adding q. s. rectified spirit to make it measure Oj. (Imp.) What will our American apothecaries think of this? Our Irish brethren do not seem to understand the constitution of sarsaparilla, or its relation to solvents, else they would have directed an alcoholic menstruum.

Infusions.—The average time of maceration in these preparations has very properly been abridged, none of them requiring more than one hour. Among them we notice as new:—

Infusum Ergotæ; two drachms to nine ounces.

Infusum Matico; half an ounce to ten ounces, &c.

Infusum Polygalæ; instead of Decoctum Senegæ.

Iodinium Purum.—Commercial iodine is directed to be purified thus:—" Introduce it into a deep porcelain capsule of a circular shape, and having covered this as accurately as possible with a glass matrass filled with cold water, apply to the capsule a water heat for the space of twenty minutes, and then, withdrawing the heat, permit the capsule to cool. Should the sublimate attached to the bottom of the matrass include acicular prisms of a white color and pungent odor, let it be scraped off with a glass rod and rejected. The matrass being now returned to its previous position, a gentle and steady heat (that of a gas lamp answers well) is to be applied, so as to sublime the entire of the iodine. Upon now

lifting off the matrass the purified product will be found attached to to its bottom. When separated, it should be immediately enclosed in a bottle furnished with an accurately ground stopper."

We presume the first sublimation is intended to detect and remove any iodide of cyanogen which may happen to be present.

Arsenici et Hydrargyri Hydriodatis Liquor, or Donovan's solution, is made directly from its elements by the published process of Mr. Donovan. We prefer to make it from the iodides of arsenic and mercury, previously prepared.

Hydrargyri Iodidum Viride; means protiodide of mercury.

Potassii Iodidi Liquor Compositus, means a solution of five grains of iodine and ten grs. of iodide of potassium in a pint of distilled water.

Linimentum Cantharidis, is made by digesting three ounces of powdered cantharides, in twelve fluid ounces of olive oil for three hours, then expressing and straining.

Linimentum Crotonis, is a mixture of a fluid ounce of croton oil with seven fluid ounces of oil of turpentine.

Arsenicum Purum, indicates metallic arsenic. The following process is given for its preparation. Take of white oxide of arsenic two drachms. Place the oxide at the sealed end of a hard German glass tube of about half an inch in diameter and eighteen inches long, and, having covered it with about eight inches of dry and coarsely pulverised charcoal, and raised the portion of the tube containing the charcoal to a red heat, let a few ignited coals be placed beneath the oxide so as to effect its slow sublimation. When this has been accomplished the metallic arsenic will be found attached to the interior of the tube at its distant or cool extremity."

Directions are given for preventing the stoppage of the tube, by the accumulation of the sublimate, (with an iron wire,) and for avoiding the fumes.

Ferri Pulvis, means iron reduced by hydrogen, and for which a formula is given; a gun barrel is used as the reduction tube.

Hydrargyri Pernitratis Liquor.—Under this name the acid nitrate of mercury solution, of the hospitals, is intended.

It is directed to be made by dissolving two ounces of mercury in a fluid ounce and a half of nitric acid (sp. gr. 1.5) diluted with

an equal bulk of water, and afterwards evaporating till the solution measures two fluid ounces and a half.

Volatile Oils, are directed to be prepared in the usual way, and the distilled water obtained with them, kept for medical use.

Adeps Suillus Præparatus is hog's lard that has been melted with twice its weight of water, and after being stirred suffered to cool, and the lard separated for use.

Unguentum Cantharidis is made with eight fluid ounces of Liniment of Spanish flies, three ounces of white wax, and one ounce of spermaceti. It is a more active preparation than that of the U. S. P.

Unguentum Picis Liquidæ. In this preparation the suet has been abandoned; ten fluid ounces of tar being incorporated by fusion with four ounces of yellow wax.

Ammoniæ Liquor Fortior, is directed to be of sp. gr. .900.

Argenti Oxidum, is directed to be made with lime water; half a gallon being used to decompose half an ounce of nitrate of silver, dissolved in four ounces of water,—the precipitated oxide is afterwards washed with distilled water, dried below 212°, and preserved in a bottle—nothing is said in reference to preserving it from the light, a precaution quite necessary.

Emplastrum Ammoniaci, is ammoniac purified by solution in proof-spirit with the aid of heat, strained and evaporated to the proper consistence. The old menstruum was vinegar of squills.

Emplastrum Resinæ, contains one eighteenth of its weight of Castile soap.

Pulvis Antimonialis, is made by a new process; the old method by deflagration being totally abandoned. It is as follows:—

"Take of tartar emetic, and phosphate of soda, of each four ounces; chloride of calcium, two ounces; solution of ammonia, four fluid ounces; distilled water, one gallon, and a half, or q. s. Dissolve the tartar emetic in half a gallon, and the chloride of calcium, and phosphate of soda each in a quart of the water. Mix the solutions of the tartar emetic and phosphate of soda, when cold, and then pour in the solution of chloride of calcium. Boil now for twenty minutes, and having collected the precipitate, which will have then formed, on a calico filter, wash it with hot distilled water, until the liquid which passes through ceases to give a precipitate with a dilute solution of nitrate of silver. Finally, dry

the product by a steam or water heat, and reduce it to a fine powder.

Pulveres Effervescentes Citrati, are a kind of soda powders containing half a drachm of citric acid in one paper, and 33.4 grs. of bicarbonate of soda, or 39.4 grs. of bicarbonate of potassa in the other paper. A corresponding preparation with tartaric acid is also directed.

Pulvis Rhei Compositus, is a mixture of two parts of rhubarb, six of magnesia and one of ginger. It is a good preparation, and adopted from the Edinburgh Pharmacopœia.

Alcohol, signifies alcohol sp. gr. .795, and prepared by distilling 16 parts of alcohol of sp. gr. .818, with 10 parts of quick lime, rejecting the first ninth of the distillate. The process is like that of the Edinburgh Pharmacopœia.

Spiritus Fortior, is alcohol of sp. gr. .818.

Spiritus Tenuior, is proof spirit (sp. gr. .920.)

Essences.—Under this head we find a class of preparations consisting of volatile oils dissolved in alcohol, and about the strength of our tincture of oil of peppermint. These are substituted for the distilled spirits. They are employed pharmaceutically for preparing the aromatic waters, and for aromatising mixtures. We believe that such preparations are much more efficient and uniform in strength than the distilled spirits, and although they are liable to the objection, that it is not always possible to get the volatile oils pure and in good condition, yet even this objection will not counterbalance the advantages they present when made in this way.

Antimonii Sulphuretum Præcipitatum, is made by fusing black sulphuret of antimony and dried carbonate of potassa, boiling the resulting mass, previously reduced to powder, in water, and filtering the solution into diluted sulphuric acid; the precipitate being subsequently washed and dried.

Syrupus Acid Citrici, is simple syrup, containing six drachms and two thirds of citric acid to the pint, flavored with tincture of lemon peel.

Syrupus Ferri Iodidi, contains but 34.16 grs. of the Iodide per fluid ounce, whilst our preparation has 48 grains in the same bulk.

Syrupus Hemidesmi, is a syrup of the root of Hemidesmus Indicus or Indian Sarsaparilla.

Syrupus Morphia Acetatis, and *Syrupus Morphia Muriatis* are solutions of the respective salts in simple syrup, ¼ of a grain per fluid ounce.

Tinctura Cannabis Indicæ, is made by dissolving half an ounc of purified extract of Indian hemp, in half a pint of alcohol.

Tinctura Cinchona.—All of the pharmaceutical preparations of cinchona, except quinia and its salts, are prepared with crown or pale bark. We are accustomed to view this species as so inferior in medicinal power, that it is a matter of surprise that it should be the only one employed in the galenical preparations of bark. There is no extract of bark officinal.

Tinctura Matico, made with 8 ounces to 2 pints is officinal.

Valerianates.—Under this head the valerianates of *iron*, *quinia*, *soda* and *zinc* are introduced. As the others are all made from the soda salt, by double decomposition with salts of the respective bases, we will give the formula for the latter in full, as it is unique.

Soda Valerianas.

Take of Bichromate of Potash, in powder, nine ounces.

Fusel oil, four fluid ounces.

Oil of Vitriol of Commerce, six fluid ounces and a half.

Water, half a gallon.

Solution of Caustic Soda, one pint, or as much as may be sufficient.

Dilute the oil of vitriol with ten ounces, and dissolve with the aid of heat, the bichromate of potash, in the remainder of the water. When both solutions have cooled down to nearly the temperature of the atmosphere, place them in a matrass, and, having added the fusel oil, mix well by repeated shaking, until the temperature of the mixture, which at first rises to 190°, has fallen to 80° or 90°. The matrass having been now connected with a condenser, heat is to be applied so as to distil over, about half a gallon of liquid. Let this, when exactly saturated with the solution of caustic soda, be separated from a little oil that floats on its surface, and evaporated down until the escape of aqueous vapor having entirely ceased, the residual salt is partially liquified. The heat should now be withdrawn, and when the valerianate of soda has concreted, it is, while still warm, to be divided into fragments, and preserved in a well stopped bottle."

In this process valerianic acid is formed by the oxidizing action

of chromic acid on the fusel oil, and becomes valerianate of soda when saturated with the solution of caustic soda and evaporated. The *fusel oil* used for this transformation will be noticed presently.

Acetum Colchici, is of the same colchicum strength as ours, but the menstruum contains twice as much real acetic acid.

Medicated Waters, are made by agitating a fluid ounce of essence (of Anise for example) with half a gallon of distilled water, and filtering; except in two instances. Cherry laurel water is distilled from the leaves, and Rose water is made by agitating 20 drops of oil of roses with half a gallon of distilled water. It is remarkable, in view of the well known property of magnesia and other insoluble powders, in facilitating the solubility of volatile oils, that the revisors of this work should not have adopted that method.

Wines.—But three of these are officinal, those of ipecac, opium, and rhubarb.

In a short supplement we find the following :—

Alcohol Amylicum—Fusel Oil.—Take of the light liquid, which may be obtained at any large distillery by continuing the distillation some time after the pure spirit has been all drawn off, any quantity.

Introduce it into a small still or retort connected with a condenser, and apply heat so as to cause distillation ; as soon as the oil begins to come over unmixed with water, the receiver should be changed, and the distillation being resumed and carried nearly to dryness, the desired product will be obtained."

We give this formula as a sequel to the one for valerianate of soda.

Chloroform.—The only peculiarities noticed in this formula are the use of quick lime to the extent of half the weight of the chlorinated lime employed, and the rectification of the chloroform, after agitation with sulphuric acid, from a little peroxide of manganese.

Elaterium.—A formula for its preparation is given.

Sodæ Causticæ Liquor, is a solution of caustic soda, sp. gr. 1.056.

REPORT OF THE COMMITTEE ON ADULTERATIONS AND SOPHISTICATIONS OF DRUGS, MEDICINES, CHEMICALS, &c. Presented to the American Medical Association at its Third Annual Meeting, held in Cincinnati, May, 1850. Philadelphia, 1850. pp. 20.

Most of our readers are perhaps aware that for several years past the great interests of Medicine have been represented by Annual Meetings of delegates from the regularly organized medical societies and institutions in all parts of our country, under the name of the "American Medical Association." This numerous and respectable body vary their place of meeting among the chief cities of the Union; the last meeting having been held in Cincinnati, and it adjourned to meet in Charleston, S. C., in May next. The business of these meetings is conducted through committees, who are appointed at one session and report at the next. The pamphlet before us is the report of the Committee on Adulterations, &c., by Dr. Robert M. Huston, Chairman. We felt some interest to know who were the persons to whom this important subject, so closely affecting our interests as pharmaceutists, had been committed, but we looked in vain over the pages of the Report, for a list of the Committee. We find that "to Drs. Jackson and Bowditch of Boston; Reyburn and Johnston of St. Louis; Frost, of Charleston, and Upshur, of Norfolk, especially, the Association is largely indebted for their zealous efforts in the prosecution of these inquiries. It is a subject of regret, however, to the Chairman of the Committee, that most of their reports came into his possession at a period too late to do justice to their authors or to the subject." It would perhaps have been unjust to the other members of the Committee to have given them credit for labor they did not perform.

Dr. Huston has considered the subject under the distinct heads of foreign and domestic adulterations. In reference to foreign importations he considers the operation of the drug Inspectors under the Law has been decidedly beneficial, the quality of importations being improved, and the amount of rejected drugs greatly reduced. As was anticipated, the working of the Law has not been without inconvenience to some of those concerned, whose aim is perfectly just and honourable. We allude to the Manufacturing Chemists; and these gentlemen, we think, have just cause to complain of the present working of the Inspection. The importance of fostering

and encouraging chemical manufactures, needs no word of ours to declare it, whether viewed in a national, medical, or economical light; and whilst we would very reluctantly advocate any modification of the Law that would open the door to the designing, we believe that a change is possible which will enable the manufacturer to import certain specified drugs, solely for manufacturing purposes, as Opium, Iodine, and Barks, of a quality below the standard.

In reference to *home adulterations*, Dr. Huston thinks they have rather decreased than increased, since the passage of the Law.

"To determine the point, some of the physicians of Boston had an analysis made by a competent chemist, of a few drugs purchased from various druggists and apothecaries in that city. Thirteen specimens were procured from—1st, the *wholesale druggists;* 2d, the *superior apothecaries;* 3d, the *minor apothecaries*. The results of this examination were more favorable than could have been anticipated. Only four of the articles failed of being of the standard purity, viz: Turkey rhubarb, and bitartrate of potassa, bought of the first class; yellow cinchona procured from the second class; and ipecacuanha from one of the third. The rhubarb was one half, the cinchona one eighth of its proper strength; the bitartrate contained ten parts of foreign matter, and the ipecacuanha was but one half the strength it should have been."—*Report page* 7.

"A member of the committee from Missouri, undertook similar investigations in the city of St. Louis, but with results less satisfactory. He analysed various samples of mercurial ointment sold there, and generally purchased in the eastern cities, and '*in every instance*, proved '*a large deficiency of mercury*,' and he was told by reliable authority, that the ointment was sometimes prepared in St. Louis, 'by mixing a small portion of the genuine ointment with cerate, and giving it the requisite blue shade by means of crude antimony.' An examination of fifteen samples of blue mass, discovered great inequalities in strength, with deficiency of mercury in all. 'One third only gave an approximation' to the officinal proportion of the metal. 'In some of the samples, it was evident that materials not known to the officinal formula, had been intermingled.'

"The same gentleman ascertained that the powders of roots

and barks sold in the shops, were largely adulterated in many instances, and that of these ipecacuanha was especially inert. The roots, leaves, barks, seeds, and flowers, he found to be 'generally far inferior in quality to the same articles kept for city sale by eastern druggists.' The alkaloid's and their salts, as quinia, strychnia, morphia, &c., manifested less of intentional fraud. Nitrate of silver was of various degrees of purity, and of corresponding price. The vegetable extracts were exceedingly variable in quality and effects; and a like inferiority was noticed in the essential oils, as well as in various other articles."

We are sorry to see this additional testimony to the existence of a practice of which the druggists of the Eastern cities have been accused. Whether it arises from the disposition to buy cheap on the part of the Western drug dealer, or to *sell* cheap, or practice fraud on the side of the Eastern druggist, we do not know. Extensive observations by the chairman in Philadelphia, and some inquiry in New York, have satisfied him that adulterations are looked upon with greater disfavor, and actually less practiced than formerly. The same he believes to be true in Boston, and probably in other cities. If this be a fact, there must yet remain some black sheep to render the statement of the St. Louis member of the committee, correct and true. The practice of certain druggists of respectable character, of keeping two qualities, or strengths of galenical preparations, is alluded to with just disapproval. Articles like laudanum, nitrate of silver, and spirit of nitric ether, are weakened by dilution to suit customers. This practice, if it yet continues to exist, is certainly a great evil. Large quantities of preparations like those mentioned, are sold by country store keepers, who obtain them from druggists in the city stores. Being no judges themselves, and accustomed to buy on the cheap principle, without understanding or feeling the responsibility which should ever attach itself to the dealer in medicines, these store keepers are a fruitful source of the practice alluded to.

The report alludes to the adulterations of powdered vegetable drugs. In this item there has been a very decided improvement of late years. With Dr. Huston, we think that the present imperfections in the preparations, are more the result of powdering inferior qualities of the several drugs, than of any admixture of cheap inert matter, although this may yet be done in some instances.—

Some druggists seem to have a decided bluntness of vision when preparing drugs for the powderer, and are not careful to remove deteriorated and decayed portions, which not only have no virtue, but dilute the parts which yet retain their strength.

The report concludes with suggestions of a remedial character, which are,

1st. That state legislatures should be applied to, to appoint inspectors of drugs, and make it a penal offence to deal in adulterated drugs and medicines. The hopelessness of this suggestion is admitted by the report itself.

2d. "That physicians should feel it to be their duty to inspect the medicines in the drug stores from which they are in the habit of obtaining supplies for themselves or their patients. This would exercise a wholesome influence, if submitted to by the apothecary, and frequently performed by the physician, neither of which, however, is very probable."

Unfortunately for this proposition, the larger number of medical men are not sufficiently versed in materia medica and chemistry to exercise a judgment that would command the respect of the pharmaceutists and druggists. As a more probable plan, Dr. Huston suggests, that the various state medical societies shall annually appoint boards of examiners, who shall procure samples of drugs, as sold within their limits, analyse, and otherwise examine them, and publish the results. We approve of this, as well as the individual action of physicians, if they proceed in the right spirit, because it would have a wholesome influence on the tempted, and would give the really enlightened and conscientious apothecary the advantage his merits deserve.

3d. The report recommends that the apothecaries be encouraged to institute associations for scientific and educational purposes, throughout the country. This suggestion, which is not new to our pages, is worthy of being seconded.

4th. Physicians are recommended, in making their purchases, to be willing to give fair prices, and to deal only with respectable druggists, who have a character at stake: an excellent suggestion, worthy of the attention of country physicians.

In conclusion we may say, that the report of Dr. Huston has impressed us favorably, and some of its recommendations are calculated, in our opinion, to exercise a healthful influence on both professions.

COPAL AND COPAL VARNISH.

On the different sorts of Copal found in the market, and on the Mode of Manufacturing Copal Varnish for certain purposes.

BY M. R. SCHINDLER.

There are three sorts of copal to be found in the market, without either of them having any other name attached, whereby to ascertain this difference, than the terms East and West India copal, the latter term including two kinds very different from each other.

As to the East India copal, called also African copal, it is softer, more colorless, and transparent than the other varieties, always having a clean surface, and emitting an agreeable odor when heated. Its form is globular, and it would be as well at once to give it the name of *globular copal*, as a distinctive mark. This is the copal which furnishes the best varnish. Old oil of turpentine has but little action on this copal; more recently-distilled turpentine dissolves it completely; but not in a larger proportion than its own weight, or the excess of copal is precipitated, Rectified turpentine, or turpentine digested with sulphur, is able to take up double its weight of this copal without any precipitation—the solution, however, at this strength, is somewhat turbid.

Oil of rosemary, thick and old, only causes the copal to swell; that which has been newly rectified, or as it is usually met with in the market, provided that it has been carefully kept, dissolves the copal in any proportion giving a clear yellowish solution, which, in the proportion of equal parts of oil and copal, remains fluid enough for use.

This kind of copal fuses much more readily than the other two. It is less volatile, and gives out no empyreumatic oil, but only some watery acid. If the operation be performed without access of air, fire carefully regulated, and the vessels so constructed as to allow the free disengagement of the liquid substances formed, this copal is not darker after than before fusion. As soon as it ceases to froth up, the fusion is complete, and then good oil of turpentine dissolves the copal in any proportion, and forms, according to the solvent used, a beautiful and good varnish for the metals, paintings, wood exposed to air, leather, &c., &c.

The second kind of copal, called West India copal, or American

copal, is imported in pieces almost always flat, and of a size scarcely exceeding three ounces in weight; it is very hard, has a rough appearance, and is without smell or taste. Its color is yellowish, and never colorless like the preceding. Insects are very rarely to be found in it. It is brought from the Antilles, Mexico, and North America.

According to Lunery it exudes, in the Antilles, from a large tree, falls into the rivulets which run along the sides of the mountains, and from thence is carried away by the rivers, and thrown upon their banks. According to this Chemist, it owes its great hardness to its remaining a long time in water. If we carefully examine the exterior of this copal, we shall find that the outer layer, which is coarse, and not transparent, bears no impression either of sand or dirt, and rarely of leaves. Its exterior appearance gives no indication of subterranean origin.

Absolute alcohol dissolves it in so small a proportion, that no advantage is derivable from a spirituous varnish, although those which are thus prepared are very hard and durable. Rectified oil of turpentine dissolves, after a long digestion, a small quantity of this copal, and, when heated for some time, the solution becomes colored; with new oil of rosemary it swells, but is not dissolved.

It fuses also with much more difficulty than the globular copal, giving off much less watery acid, but a good deal of empyreumatic oil. Fused with access of air, it becomes entirely black, unless a large vessel be employed, in which the empyreumatic oil can be readily removed. It is also blackened by repeated fusions. As soon as the copal ceases to froth up, the fusion is complete. If it has not been sufficiently fused, or if an oil of turpentine, containing too much resin, be employed for dissolving the copal, a good deal of copal settles down from the solution. Notwithstanding most minute preparations, it is difficult to prepare a varnish with this copal, free from a brown color.

The third kind of copal is imported in convex or concave pieces, weighing about half a pound each, often containing insects and vegetable substances. Its odor is aromatic, its consistence is not hard, and, when warm, it readily takes the impression of the nail. It is of the color of hard copal, and, in order to distinguish it from the latter, I give it the name of *insect copal.*

Alcohol, oil of rosemary, and oil of turpentine act upon it in the

same way as on hard copal. Its fusing point is between that of the globular and the hard copals. When in a state of fusion, it gives off less acid than the former, but much more oil (volatile as well as empyreumatic) than the latter; in other respects it resembles the hard copal. By careful treatment, a transparent varnish is obtained with it; but so soft and so slow in drying, that it would be as well altogether to reject its use in the manufacture of varnish.

To Prepare a Varnish for Coating Metals.—Digest one part of bruised copal in two parts of absolute alcohol; but as this varnish dries too quickly, it is preferable to take one part of copal, one part of oil of rosemary, and two to three parts of absolute alcohol. This gives a clear varnish, as limpid as water. It should be applied hot, and, when dry, it will be found very hard and durable.

To Prepare a Varnish for the Scales of Thermometers.—I recommend the following:—One part of copal, one part of oil of rosemary, and three parts of oil of turpentine, recently rectified or digested with sulphur. After a moderate digestion, the varnish is ready for use. This varnish dries quick, but is not so hard as the preceding, although it resists the action of the air and atmospheric influences.

For Varnishing Leather.—Especially of delicate colors, I recommend the following:—Six parts of oil of turpentine, saturated with caoutchouc, two parts of copal, and two parts of oil of rosemary. This varnish should be applied somewhat fluid, and always dried at a high temperature.

For Varnishing Furniture.—The fused copal dissolved in oil of of turpentine is the most economical. If the copal has not been kept a sufficient time in a state of fusion, the varnish made with it remains soft for some time after it is dry, and afterwards peels off.—*Pharm. Jour., Aug.* 1, 1850.

MITCHAM: ITS PHYSIC GARDENERS AND MEDICINAL PLANTS.

[The following remarks on Mitcham and its products, embraces two of a series of articles now in course of publication in the Pharmaceutical Journal, from the pen of its Editor, Mr. Jacob Bell. They will be continued in our next. We hope at some future time to be able to give sketches of the American Physic Gardens conducted by the Shakers at Lebanon, N. Y.—Editor.]

More than 2000 years ago the physicians of Greece were supplied with herbs, of which their Materia Medica chiefly consisted, by a class of persons called ριζοτομοι (*rhizotomi* or *root-cutters,*) who occupied themselves with the collection and sale of roots and herbs. They are mentioned by Theophrastus in connection with the φαρμακοπωλαι (*pharmacopolæ* or *pharmacopolists.*) Most of them were illiterate and superstitious, and ascribed magical virtues to the roots and herbs which they collected.

Among the Romans these cullers of simples were termed *herbarii* (*herbarists,*) and, if we are to believe Pliny, they were a sad set of knaves.

At the present day, and in our country, the *rhizotomi* of the Greeks and the *herbarii* of the Romans are represented by a class of persons called *simplers*, who go about the country collecting those medicinal herbs which grow wild, and the demand for which is insufficient to induce the dealers to cultivate them. The plants thus collected are sold chiefly to the *herbalists*, by whom the profession and public are supplied.

But those medicinal plants for which there is a sufficient demand, and which can be grown in this country, are cultivated in *physic gardens* or *physic grounds*, by persons called *physic gardeners* or *herb growers*.

Although the cultivation of medicinal plants is carried on in various parts of England, yet more land is employed in this way in Surrey than in any other country; and by far the greatest part of our physic grounds lie in the parish of Mitcham, and its neighborhood, about nine miles from London. The soil of this place is a rich black mould.

The cultivation of physical plants at Mitcham commenced about a century ago. Lyson, who wrote in 1796, says, that forty years before his time there was only a few acres employed in the cultivation of medicinal herbs in this parish; whereas, at the time he

wrote, about 250 acres (of which 100 acres were devoted to the cultivation of peppermint) were occupied by physic gardeners.

At the present time more than 800 acres are devoted to the cultivation of medicinal herbs, at Mitcham, Merton and Carshalton.

About 1768 or 1769, Mr. Potter began the cultivation of physic plants at Mitcham. He was succeeded by his relative, Mr. James Moore, who furnished Mr. Malcolm with the information contained in his work relating to the medicinal plants cultivated at Mitcham.

The following are the names of the principal growers at the present time: with the number of acres of land each person has under cultivation, and the number of stills in use.

Grower's Names.	No. of Acres.	No. of Stills.	
Mr. Moore	350	5	
" Arthur	300	3	
" Martin	40	3	(not much used.)
" Newman	40	1	
" Sprules	50	2	
" Weston	40	0	
	820	14	

Several other growers cultivate a few acres of land.

A considerable number of medicinal plants are cultivated at Mitcham. Among the most important of these may be mentioned *aconite, chamomiles, belladonna, elaterium, liquorice, henbane, lavender, spearmint, peppermint, roses, poppies, savine, violets, angelica, stinking orache, caraway, foxglove, lovage, eleampane, marshmallow, and hemlock.* The principal part of the growers cultivate only peppermint and lavender, and some a few chamomiles. Mr. Arthur grows rather a larger number of plants than any other.

We propose occasionally to notice a few of the more interesting of the physical herbs cultivated at Mitcham, beginning with chamomiles and lavender.

I. CHAMOMILES.

1. *Varieties.*—There are two well-known sorts or varieties of the officinal chamomile (*Anthemis nobilis*, Linn.) cultivated at Mitcham, one called the *single chamomile* (*chamomelum flore sim-*

plici,) the other termed the *double chamomile* (*chamomelum flore pleno* vel *flore multiplici.*)

In the normal or original state, the flower, which is a composite one, has one row of white female ligulate florets, encircling a disc of yellow hermaphrodite tubular florets; and in this state the flower is said to be *single.* But the yellow hermaphrodite tubular florets have a strong tendency to become converted into the white female ligulate ones. Now, when only a few of the yellow florets have undergone this change, the flowers are still called *single ;* but when all or most of them have suffered this conversion, they are then termed *double flowers.* It is obvious, therefore, that the terms "single" and "double" are, to a certain extent, arbitrary. Flowers with a single ring of ligulate florets are certainly single, while those which have no tubular florets are decidedly double. But between these extremes there are all gradations.

The change is irregular, and occurs to a greater or less extent in the same plant. At the commencement of the season a few flowers, single or nearly so, are found on plants, which at a later period of the year, yield only double flowers. The result apparently depends in part upon the mode of cultivation, which is conducted habitually without reference to this particular object, and in part probably, on other less obvious influences.

It is generally stated that the single flowers are more odoriferous, and yield a larger proportion of volatile oil.

Lewis observes of chamomiles, that "As their active matter is almost wholly confined to the yellow disc, and as the single have large discs, but the double very small ones, and when very double scarcely any at all; it is plain that the latter cannot be equivalent to the former, unless taken in much greater quantity; and, therefore, the single or large-disced flowers alone ought to be employed for medicinal uses."

The double flowers, however, are much more showy, and hence are preferred by the public; double flowers being much more admired in floriculture than single ones. Hence, therefore in Chemists' and Druggists' shops the double sort is usually found; whereas at Apothecaries' Hall the single sort is exclusively purchased and sold.

We find it stated by Malcolm in 1805, and by Stephenson in 1809, that the single sort is almost exclusively sold to Apotheca-

ries' Hall, while the double sort finds a ready sale at the Chemists' and physic shops.

On inquiry we find that the Apothecaries' Company still exclusively keep the single sort, believing it to be the one intended by the College of Physicians. The Company purchase it of Mr. Moore.

It is very desirable to ascertain by direct experiment the actual quantity of oil yielded by single and double flowers respectively; and we should be glad to receive from any of our readers the results of their experience on this point. Mr. Brande states, that 100lbs. of dried flowers yield, upon an average, two pounds twelve ounces of oil, and three pounds four ounces of *pharmaceutical extract*. We presume this is the experience of the operators at the Hall, where single flowers only are employed.

At Mitcham two kinds of double chamomiles are distinguished, one yielding the ordinary yellowish oil, the other, which is called a new sort, a blue oil. The samples of each kind, which have been furnished us by Mr. Arthur, of Mitcham, by whom they are cultivated, are not distinguishable, except from a slight difference in the leaf, which in the new sort is more developed. The oil is generally distilled from the entire plant, not from the flowers only, as directed in the Pharmacopœia. By keeping, this blue oil* changes its color, and becomes the usual yellowish or brownish yellow color. The flowers which yield it, although fine in appearance when fresh, are liable to change color by keeping. They are therefore less adapted for sale in the market than they are for distillation.

2d. *Cultivation.*—Stevenson says that "The soil best adapted for chamomile is a dry sandy loam; the sets are planted about nine inches from each other, on beds of four feet wide, with alleys of eighteen inches between them. The culture is very similar to that of peppermint; viz. constant attention to weeding, principally with the hand; the digging of the intervals at the beginning of winter, and covering the exposed and loose roots of the plants with fresh mould."

* The *oleum chamomillæ* of continental writers is blue, and is sometimes termed *oleum chamomillæ cæruleum*. It is the produce of *Matricaria Chamomilla*, Linn.

The *oleum chamomillæ romanæ* of the same writers, is the produce of *Anthemis nobilis*, Linn.

Mr. Arthur informs us that chamomiles may be cultivated from seed, which plan is adopted for the introduction of a fresh variety from another locality, or by way of occasionally renewing the stock. But the plan commercially pursued is that of dividing the roots, each root forming the rudiments of three or four dozen plants. Mr. Arthur plants them in rows a yard apart, with an interval of eighteen inches between the plants. If planted closer the space is not sufficient for gathering the crops without treading on the plants. At the close of the season, a sufficient number of, plants are preserved to furnish the roots for the ensuing season, and the remainder are destroyed.

March is the best month for planting; but they are sometimes planted in April, and occasionally in the Autumn.

The crop is in perfection about July, and continues to yield more or less until September, and sometimes as late as October. The period, however, varies according to the season.

Either extreme of wet or dry weather is injurious, to chamomiles. A soaking shower about once a week, with intervals of sunshine is the most favorable weather.

Mr. Arthur says that chamomiles are most productive when grown in a heavy soil. A stiffish black loam suits them better than a light sandy soil, which latter causes them to become weak, or than clay which is too heavy. They are benefitted by changing the ground every two or three years. They require but little manure. If over-manured, they run to stem and leaf, and the crop of flowers is less abundant.

When gathered, the flowers are placed on canvass trays in a drying closet, warmed by means of a cockle. They remain there about a day, which time is generally found sufficient.

The average crop per acre is six cwt., but the range is from three to ten cwt. The single flowers are by weight more productive than the double; but the price being lower, the value of the crop is about the same.

The flowers supplied to the English market are grown chiefly at Mitcham and in Derbyshire. Both kinds are of good quality, but we think a preference is generally given to Mitcham flowers.

The gathering costs from three farthings to one penny per pound. The cost of gathering and drying chamomiles is about 42*s*. per cwt.

The London Market is chiefly supplied with chamomiles from Mitcham. The following according to Mr. Squire, are the quantities supplied to the principal dealers in London:

From Mitcham.		*From other places in the vicinity of London.*	*Total.*
Average of three years, 1840-41-42.	Average of three years 1843-44-45.	Average of three years, 1843-44-45.	Average of three years, 1843-44-45.
12 tons.	4 tons.	16 cwt.	4 tons 16 cwt.

II. LAVENDER.

One species of Lavender only is cultivated at Mitcham, namely, common or garden lavender, the *Lavendula vera*, D. C. The spike lavender, *Lavendula spica*, D. C., is not cultivated there.

Lavender is cultivated by dividing the roots, each of which forms the rudiments of three or four new plants. These are planted in rows about 18 inches apart, with the same interval between the plants. The second year, each alternate plant is removed to leave room for those which remain. It is common to renew the plantation after the second year; but Mr. Arthur who has given much attention to this subject at Mitcham, has succeeded in preserving the same plantation during five or six years.

Lavender is liable to a disease when too thickly planted. This occurs chiefly in the middle of the plantation, and appears to result from the aroma of the flowers, which in excess has a poisonous influence on the plants. By thinning the plantation, and ensuring a free current of air, this influence is prevented or retarded. The disease is rarely if ever met with in gardens, where single plants are cultivated. Lavender does not require a very rich soil.

A good deal of oil of lavender is drawn at Mitcham. The capacity of the stills varies from 700 to 1000 gallons. The lavender packed in bundles called *mats* (about 1 *cwt.* each) is carried to the still-house. A 1000 gallon still holds from twenty to twenty-four mats of lavender. The mat or covering of the bundles is not put into the still with the herb.

The flowers are put into the still with the stalks as cut from the ground. It takes about two hours to get the steam up; then the

finest oil is drawn for two and a half hours—that which comes afterwards is second or third quality. The oil from the stalk is not so volatile as the other, and comes last.

III. WILD OR SQUIRTING CUCUMBER.

We know of but two places in England where the wild cucumber (*Mormordica Elaterium*, Linn,) is cultivated for commercial purposes; these are Mitcham in Surrey, and Ampthill, in Bedfordshire. The London market is chiefly supplied from the former place.

This plant is a native of the south of Europe, but flourishes well by cultivation in this country. It is essentially an annual; but Mr. Arthur, of Mitcham, assures us that if the roots be covered up during the winter, the plants survive through several seasons, and he has now some which have lived three or four years. So that it would appear that, if carefully protected from the winter cold, its life is prolonged, and from an annual the plant becomes a perennial.

The seeds are usually sown about March, and the seedlings planted out about June. A considerable number of the Mitcham plants are self sown. When they grow very large and free, the stems become extraordinarily broad and flat. We have now one before us, whose stem, as it issues from the earth, is round, and about as thick as the forefinger; but it gradually becomes flat and larger, until at its broadest part it is nearly four inches wide and half an inch thick.

A wet season is injurious to the fructification of this plant; and the present season, we are informed, has been a bad one at Mitcham.

The only part of the plant which is of use is the fruit, which, as is well known, is remarkable for bursting when ripe, and expelling its seeds with a portion of its juice with great violence to a considerable distance (some say as far as eighteen or twenty yards,) whence the name of the plant—the *squirting* cucumber. The fruits, which have arrived at maturity are of a yellowish green color; and the slightest touch at this period will disengage the fruit from its footstalk, and cause the violent expulsion of the seeds. It is, in fact, dangerous to walk among the plants at this period; for painful irritation of the eyes is sometimes produced by the contact of the juice with the conjunctiva.

The cultivators of the plant, at Mitcham, sell the cucumbers by the bushel. Each bushel contains 40lbs., and the price ranges from 7*s*. to 10*s*. Forty-five years ago the price charged to the Apothecaries' Company was only 2*s*. the bushel. In 1820 Dr. Clutterbuck states that half a bushel of the fruits cost half a guinea in the market.

Elaterium is manufactured from the cucumbers in London, at Mitcham, and at Ampthill. At the time (September 3d) of our visit, this year, to the Mitcham physic gardens, the manufacture of elaterium had scarcely commenced. Some of the fruits had been gathered; but the chief manufacture of elaterium was expected to commence about the 9th or 10th of September. The plants, at the time of our visit, bore numerous fruits and were still flowering.

The manufacture of elaterium, as practiced at Mitcham, may be divided into four stages or operations;—1st. Washing and slicing the fruits; 2nd. Expressing the juice; 3rd. Straining the juice and setting it aside to deposit; 4th. The collection and desiccation of the deposit called Elaterium.

1. Washing is only requisite when the fruits are dirty, not otherwise. Each fruit is sliced longitudinally, by which it is divided into halves.

2. The juice is expressed in a common screw-press. The sliced or half fruits are wrapped in a hempen cloth and then put into the press, which is screwed up with some considerable force. One of the men engaged in the manufacture of elaterium told us that he used as much force as he was capable of exerting in screwing up the press. By some, however, this powerful expression is considered objectionable, on the ground of inferior quality of elaterium which is in this way obtained.

3. The expressed juice is then strained. One manufacturer merely strains it through a kind of colander (a perforated metallic plate.) Mr. Arthur tells us that he strains it through two sieves—one a hair sieve, the other a cypress sieve. Instead of the latter a copper wire sieve, having 100 wires to the inch, may be used. The colander, above alluded to, cannot, it appears to us, be sufficient to separate the various shreds and pieces of vegetable tissue which escape from the press along with the juice. The expressed juice, as it escapes from the press, is usually received in a small

tub, and when it is full, the juice is strained. This appears to us to be an error of the Mitcham manufacturers—the juice should be strained as it runs from the press, before it has had time to deposit.

The strained juice is then set aside for the deposit to take place. At Mitcham the deposite vessels are common tubs or half barrels about eighteen inches high. This part of the process it appears to us also admits of improvement. The deposite vessels should be made either of glazed earthenware or of glass. The elaterium is deposited from the juice in a few (usually three or four) hours.

4. When the deposition of the elaterium has taken place, the supernatent liquor is carefully poured off. The deposit is then placed on calico cloths resting on hair sieves, and is there allowed to drain for about twelve hours. The drained deposite is then removed by a knife, and spread over small cloths and dried on canvas frames in the drying stove.

By one manufacturer we were informed that he dried the elaterium on paper.

Mr. Arthur tells us that one bushel or forty pounds of fruit yield about half an ounce of fine elaterium. This agrees with the experience of Dr. Clutterbuck, who states that half a bushel yielded "less than two drachms of elaterium." Some persons, it is said, obtain as much as three-quarters of an ounce from the bushel of fruits; but probably this is effected by the use of extra pressure, by which elaterium of inferior quality is procured.

Good elaterium has a pale pea-green tint. Inferior qualities have a duller or sadder color.

We were assured at Mitcham that the juice from which elaterium has deposited is not used to obtain a second deposit, but is thrown away.

The juice which is expelled along with the seeds scarcely becomes clouded by exposure to the air, and is believed to be inert; but that obtained by pressure, from the burst fruits, does become milky, and this deposite constitutes the elaterium. It follows therefore, that recently burst fruits are nearly, if not quite, as good for making elaterium as those which have not burst.

REPORT OF AN EXPERIMENT ON FOUR BUSHELS OF CUCUMBERS.

The fruits were sliced longitudinally, the pulp and seeds care-

fully scraped out, immediately placed on a sieve, and stirred without pressure. The juice thus obtained was set aside for six or eight hours, and yielded 7½ drachms of remarkably fine elaterium (No. 1) of pale green color, and having the strongly characteristic aroma which has been compared to that of senna or tea. The pulp and seeds were then washed in a little distilled water, subjected to gentle pressure, and on being set aside to deposite, yielded half an ounce of elaterium (No. 2) of a greyish green color, and having rather less of the fragrant odor.

The sliced cucumbers were then washed with distilled water and pressed. The deposite obtained (No. 3) amounting to an ounce. It had a dark, dirty, olive-green color, less aroma than the former products, and is apparently unfit for use.

The fracture of the three samples differs considerably; No. 1, being the most friable, brittle, and easily reduced to powder; No. 2 similar, but in a rather less degree; No. 3 is more tough and gummy in its fracture.

In order to obtain the maximum product of good elaterium, it is necessary to strain off the liquid from the pulp and seeds as quickly as possible after the cucumbers are cut. The deposite speedily takes place on exposure of the juice to the air, and unless the above precaution be taken, a portion of it is likely to be left in the sieve with the pulp; or, if afterwards obtained by washing, it is more or less contaminated with the inert constituents of the pulp.

IV. ROSES.

Two sorts of roses are cultivated at Mitcham, namely, one known there as the *Damask Rose*, and which Dr. Pereira states to be the *Rosa gallica*, var. δ *officinalis*, De Candolle; and the second called at Mitcham the *Provence* or *Cabbage Rose*, and which, according to Dr. Periera, is the *Rosa centifolia*, var. *a. vulgaris foliacea*, De Candolle.

Mr. Moore (1805) states that:—

"The ground is prepared in the same manner as for lavender and liquorice, and the roses planted three feet asunder, are kept well cleaned and hoed, and in the autumn all the superfluous and dead shoots are cut out, and the ground dug between them. Every other year they are refreshed with twenty-four loads of spit dung pointed in between them, and close to the roots."

"Mr. Moore has about seven acres of the Damask Rose and three of the Provence or Cabbage Rose, of each of which he plants a few every year to keep up a succession in high order."

The following is the mode of cultivation as now practiced by Mr. Arthur:—

1. the Damask or French Rose—*Rosa Gallica*, var. δ *officinalis* De Cand.

These roses are planted in rows a yard apart, with about eighteen inches between the plants. The time for planting is autumn or spring. They are propagated by dividing the roots, and also from suckers or runners, which throw up fresh plants. After about three years the plant is liable to be attacked by an insect, the maggot of which destroys the leaves and the young buds. It is, therefore, usual to renew the plantation every two or three years. Some fresh plants are grown every year, only the best of the old stock being preserved. After the fourth year the plants are worth nothing. The tops of the plants are cut every year with shears to encourage the growth of new shoots. Roses will grow either in a light or heavy soil, but they flourish best when the soil is rather heavy.

The season for gathering the flowers of the damask rose commences early in June, and last about five or six weeks. They are gathered by women and children twice a-day, in order to secure the buds before they are too much expanded. The buds are dried in stoves in the same manner as chamomiles, except those required for conserve, which are sent to the market in a fresh state.

2d. The Provence or Cabbage Rose—*Rosa centifolia,* var. *a. vulgaris foliacea.*

These roses are propagated by dividing the roots, and the mode of cultivation resembles, in most respects, that which is adopted with the other variety. They are not, however, liable to the maggot, and the plants are therefore not removed so often. They continue to flourish for many years. They require more care in pruning, the old wood being cut away with a knife, which causes new shoots to be formed, and it is these latter which produce the flowers.

The gathering usually commences the last week in June, and is continued for about five weeks. The flowers being used in the expanded state, they are gathered every other day, which is found to be often enough.

In the process of distillation it is a common practice to put the entire flower into the still as received from the grower, but the result is much improved by rejecting the calyx. This is rather troublesome, as each flower must be separately stripped, which occupies considerable time and increases the expense; but the labor is well bestowed, as the water is much more fragrant. During the distillation, a quantity of concrete essential oil floats on the water, which when collected resembles the foreign otto of roses. We have seen about half-an-ounce, which resulted from the distillation of 150 gallons of rose water. The quantity, however, is too small to be worth collecting for sale, and it is generally supposed that its abstraction impoverishes the water; and that, although the water is saturated at the time, it afterwards dissolves by degrees the essential oil which is left floating in it. The water should be strained before it is used, as the particles of oil are likely to produce irritation, especially when the water is used for eye lotions.

V. ACONITE OR MONKSHOOD.

We find that three sorts of aconite or monkshood are cultivated at Mitcham; but on the 3rd of September (1850) only one sort (termed *giant monkshood*) was in flower.

1.The usual sort cultivated is called *common monkshood*, but we were too late in the season to see it. From the description which was given to us of it, we suppose that it is probably *Aconitum Napellus*. We were informed that it is planted in the autumn (October) by dividing or separating the tubers, and the roots may be gathered the following autumn; but it is a better practice to leave them for two years in the ground. When gathered they are washed and dried. This sort of aconite flowers in June. One of the growers informed us that he was in the habit of cutting off the flowers; we suppose for the purpose of promoting the growth of the roots.

2. Mr. Arthur informs us, that the preceding is the only sort of aconite which he cultivates; but that there is a party-colored sort grown at Mitcham, the roots of which are sold in the London market. The flowers are white, with a little blue in them. It is a fine tall plant, which like the common aconite, flowers early in the season. We have had no opportunity of seeing this sort.

3. At Mr. Moore's physic-grounds we found another sort of aconite in cultivation, under the name of *giant monkshood*, but we were informed that as yet none of it had been taken to market. The specimens which we saw were about five feet high. The inflorescence was a somewhat loose panicle, with ascending stiffish branches, the helmet conical, the color of the flowers a paler or brighter blue than that of *A. Napellus*, the staminal filaments hairy, the carpels or young fruits converging. The last character readily distinguishes it from *A. Napellus*, the carpels or young fruits of which diverge from each other. It appears to be referable to Reichenbach's section Corythælon which is characterized as follows:—(Rad. tuberosa, fol. 5-7-pedata) perianthio deciduo, fructu juniori nutante, carpidiis apice convergentibus." In this section Reichenbach places three species—*A. palmatifidum*, Reichenb., with smooth filaments; *A. exaltatum*, Bernhardi, with hairy filaments and conical hemlet; and *A. Stoerkianum*, Riechenb., with hairy filaments and vaulted hemlet. From these characters this giant aconite appears to be *A. exaltatum* of Bernhardi, of which "A. decorum" is given by Reichenbach as a synonyme. In confirmation of this statement we find that the giant aconite of Mitcham agrees in every particular which we can discover, with a plant growing in the gardens of the Royal Botanic Society, Regent's Park, and ticketed "Aconitum decorum." Reichenbach says, this species flowers in July and August in Germany; we found it in flower and beginning to give fruit, both at Mitcham and at Regent's Park, in the beginning of September.—*London Pharm. Transactions, Oct.* 1, 1850.

ON THE CONSTITUTION OF ATROPINE, DATURINE AND ACONITINE.

By Dr. A. von Planta.

Atropine.—The atropine used by the author for these researches was prepared by Merck, and possessed the following properties:—It dissolved in 299 parts of water at the ordinary temperature; dissolved in almost every proportion in alcohol, but less readily in ether; in both liquids, as well as in water, the solubility is increased by heat. It fused at 194° F. to a clear transparent mass,

which became brittle on cooling; on the reapplication of heat, and again allowing it to cool, it was converted into stellate groups of crystals. At 284° a portion is volatilized undecomposed, but the greater portion is destroyed. Heated upon platinum foil, it melts, puffs up, giving off white fumes, and burns with a bright flame, leaving a shining black cinder, which finally disappears entirely.

Atropine has a strong alkaline reaction, and combines with acids, forming salts, which appear mostly not to crystallize; they are soluble in water and alcohol, but very sparingly in ether, especially the muriate and sulphate. On pouring a concentrated alcholic solution of the muriate into ether, a syrupy solution separates, which did not crystallize after long standing in ice, nor was it possible to obtain the neutral muriate of atropine crystallized by retaining it for several days at a temperature of 86°–104°. The solution of the muriate of atropine furnishes pulverulent precipitates with potash, ammonia and carbonate of potash, but only with very concentrated solutions, and they dissolve very readily in an excess of the reagent. Carbonate of ammonia, bicarbonate of soda and phosphate of soda give no precipitates; perchloride of gold produces a sulphur-coloured crystalline precipitate, which is sparingly soluble in muriatic acid; chloride of platinum gives a pulverulent precipitate, which cakes together like a resin and is very readily soluble in muriatic acid. The sodio-chloride of iridium gives no precipitate; perchloride of mercury gives one, but only in very concentrated solutions. The potassio-iodide of mercury produces a very heavy, whitish, caseous precipitate, which contracts considerably upon the addition of muriatic acid. Iodide and sulphocyanide of potassium give no precipitate; tincture of iodine strikes a kermes-brown colour; iodic acid, in the cold, no colour. With tincture of galls, a dense flocculent precipitate is obtained, but only after the addition of muriatic acid, in the excess of which it dissolves somewhat. Nitropicric acid produces a sulphur-coloured pulverulent precipitate; nitric acid causes no change either alone or on the addition of protochloride of tin.

Atropine, dried under the air-pump, furnished, on an average of three analyses, Carbon 70.23, Hydrogen 8.23, Nitrogen 5.26, Oxygen 16.28, equivalent to the formula $C_{34}\ H_{23}\ NO_6 = 289$.

Daturine, $C^{34}\ H^{23}\ NO^6$.—The analysis of daturine led the author to the remarkable result, that daturine is identical with atropine. The preparation examined consisted of fascicles of colourless bright

needles; it was heavier than water, not altered by exposure to the air, perfectly free from smell, and scarcely soluble in water. It dissolved more readily in alcohol than in ether, but in both liquids its solubility was increased by heat. At 190° F. it melts without decreasing in weight; on cooling, it furnishes, like atropine, a brittle, colourless, transparent mass, which at a higher temperature is partially volatilized unaltered. It melts upon platinum, puffs up, giving off white vapours, and burns with a bright luminous flame, leaving a shining black cinder, which at last entirely disappears.

Daturine has a strong alkaline reaction, and forms salts with acids. In the present case it was likewise found impossible to obtain the sulphate and muriate crystallized. They are both readily soluble in water and in alcohol. The muriate of daturine furnishes pulverulent precipitates with potash, ammonia and carbon of potash, but only with concentrated solutions; the precipitates dissolve easily in an excess of the reagent. Carbonate of ammonia, bicarbonate and phosphate of soda give no precipitate; perchloride of gold produces a sulphur-coloured crystalline precipitate, which is slightly soluble in muriatic acid; chloride of platinum, with very concentrated solutions, gives a precipitate, which is at first pulverulent, but soon cakes together like a resin, and then no longer dissolves so readily in muriatic acid. Perchloride of mercury produces a white pulverulent precipitate only in very strong solutions; it is readily soluble in muriatic acid and in chloride of ammonium; no precipitate is produced by sulphocyanide of potassium; tincture of iodine gives a kermes-coloured flocculent precipitate, which soon turns blackish-blue; tincture of galls and tannic acid cause a copious precipitate only on the addition of muriatic acid; that produced by the first reagent dissolves with difficulty in the excess of muriatic acid; that by the second, readily. Nitropicric acid furnishes a yellow precipitate, which is easily soluble in ammonia.

The daturine for analysis was dried under the air-pump; the results do not agree perfectly with the calculation, owing to the presence of a little impurity, which was subsequently detected. An average of three analysis gives Carbon 69.30, Hydrogen 8.09, Nitrogen 4.94, Oxygen 17.75, represented by $C_{34}\,H_{23}\,NO_6 = 289$.

Aconitine.—The aconitine employed in this investigation, after being purified by the author, formed a colourless powder, without

smell and not altered by exposure to air; heated upon platinum, it melted very readily, took fire, and left a shining black cinder, which was entirely consumed. It cannot be volatillized like daturine and atropine. Aconitine is heavier than water; it dissolves very easily in alcohol, less so in ether; it melts at 176° F. to a transparent vitreous mass without losing in weight; at 248° it begins to turn brown, and is decomposed at a higher temperature. It has a strong alkaline reaction, completely neutralizes acids, but the salts do not crystallize. The muriate of aconitine furnishes, with potash, ammonia and carbonate of potash, a white flocculent precipitate of aconitine, which is slightly soluble in an excess of the reagent. No precipitate is produced by carbonate of ammonia, bicarbonate of soda or phosphate of soda. Chloride of gold gives a dense yellowish precipitate, which is not perceptibly soluble in muriatic acid; chloride of platinum gives no precipitate. With perchloride of mercury and sulphocyanide of potassium white caseous precipitates are obtained; that formed by the first reagent dissolves without difficulty in muriatic acid and chloride of ammonium. Tincture of iodine produces a kermesine-brown; tincture of galls and tannic acid, upon the addition of a drop of muriatic acid, a dense flocculent precipitate, which requires much muriatic acid for its solution. Nitropicric acid gives a yellow precipitate, insoluble in ammonia. The analysis of aconitine, dried under the air-pump, furnished on an average of three trials, Carbon 67.97, Hydrogen 8.79, Nitrogen, 3.42, Oxygen 19.82, represented by $C_{60}\,H_{47}\,NO_{14}$.

It follows from this that the atomic weight of aconitine is 533.66. The muriate of aconitine, prepared by passing muriatic gas at 212° over aconitine, contained 13.41 per cent. of muriatic acid. According to which we have—

		Found.	Calculated according to $C^{60}\,H^{47}\,NO^{14}+2HCl$.
1 equiv. aconitine	533	86.59	87.16
2 equivs. muriatic acid . .	72.92	13.41	12.84
1 equiv. bimuriate of aconitine	605.92	100.00	100.00

Chemical Gazette, Sept. 16, *& Liebig's Annalen,* lxxiv. p. 245.

ON THE CAUSES AND PREVENTIVES OF MILDEW IN PAPER AND PARCHMENTS, WITH AN ACCOUNT OF EXPERIMENTS MADE ON THE SATURATION OF GROWING WOOD WITH ANTISEPTIC CHEMICAL SOLUTIONS.

By Alfred Gyde, Esq., M. R. C. S. E.

The author stated, that, owing to the imperfections formerly existing in the microscope, little was known of the real nature of the class of plants called *fungi* until within the last few years; but, since the improvements in that instrument, the subject of the development, growth and offices of the fungi has received much attention. They compose, with the algæ and lichens, the class of thallogens (Lindley), the algæ existing in water, the other two in air only. A fungus is a cellular flowerless plant, fructifying solely by spores, by which it is propagated, and the methods of attachment of which are singularly various and beautiful. The fungi differ from the lichens and algæ in deriving their nourishment from the substances on which they grow, instead of from the media in which they live. They contain a larger quantity of nitrogen in their constitution than vegetables in general do, and the substance called "fungine" has a near resemblance to animal matter. Their spores are inconceivably numerous and minute, and are diffused very widely, developing themselves wherever they find organic matter in a fit state. The principle conditions required for their growth are moisture, heat, and the presence of oxygen and of electricity. No decomposition or development of fungi takes place in dry organic matter; a fact illustrated by the high state of preservation in which timber has been found after the lapse of centuries, as well as by the condition of mummy-cases, bandages, &c., kept dry in the hot climate of Egypt. Decay will not take place in a temperatnre below that of the freezing-point of water, nor without oxygen; by excluding which, as contained in the air, meat and vegetables may be kept fresh and sweet for many years.

The action which takes place when moist vegetable substances are exposed to oxygen is that of slow combustion (it has been called by Liebig "eremacausis"); the oxygen uniting with the wood and liberating a volume equal to itself of carbonic acid, and another portion combining with the hydrogen of the wood to form water. Decomposition takes place on contact with a body already

undergoing the same change, in the same manner that yeast causes fermentation. Animal matter enters into combination with oxygen in precisely the same way with vegetable matter; but as, in addition to carbon and hydrogen, it contains nitrogen, the products of the eremacausis are more numerous—carbonate and nitrate of ammonia, carburetted and sulphuretted hydrogen and water; and these ammoniacal salts greatly favour the growth of fungi. Now paper consists essentially of woody fibre, having animal matter as size on its surface.

The first microscopic symptom of decay in paper is irregularity of surface, with slight change of colour, indicating the commencement of the processes just noticed; during which, in addition to carbonic acid, certain organic acids are formed, as crenic and ulmic acids, which, if the paper has been stained by a colouring matter, will form spots of red on the surface. Spots of the same kind are similarly formed on leather coloured during its manufacture. Provided that fungi have not taken root, the colour can be restored by ammonia or any alkali. The same process of decay goes on in parchment as in paper, only with more rapidity, from the presence of nitrogen in its composition. When this decay has begun to take place, fungi are produced, the most common species being *Penicilium glaucum.* They insinuate themselves between the fiber, causing a freer admission of air, and consequently hasten the decay.

The substances most successfully used as preventives of decay are the salts of mercury, copper and zinc. Bichloride of mercury (corrosive sublimate) is the material employed in the kyanization of timber, the probable mode of action being its combination with the albumen of the wood, to form an insoluble compound insusceptible of spontaneous decomposition, and therefore incapable of exciting fermentation. The antiseptic power of corrosive sublimat may be easily tested by mixing a little of it with flour-paste, the decay of and appearance of fungi on which are quite prevented by it. Next to corrosive sublimate, in antiseptic value, stands the salts of copper and zinc. Chloride of zinc has been patented by Sir W. Burnett for the preservation of wood, sail-cloth, &c., and appears to succeed admirably. For use in the preservation of paper, the sulphate of zinc is better than the chloride, which is to a certain extent deliquescent.

A series of experiments were made, in the summer of 1840, on the use of metallic and other solutions for the preservation of wood. A deep saw-cut was made all round the circumference of some growing trees near their base, into which the solutions were introduced by forming a basin of clay beneath the cut; thus the solution took the place of the ascending sap, and in periods of time varying from one to three days was found to have impregnated even the topmost leaves of trees fifty feet high. The trees were chiefly beech and larch. After impregnation they were felled, and specimens about five feet long by two inches square were cut out, and packed in decaying sawdust in a warm damp cellar, where they were left for seven years. The details of the experiment are given in a table, by which the following general rules are made to appear:—The pieces of wood saturated with sulphate of copper in the proportion of one pound to one gallon of water, or with acetate of copper in the proportion of one pound to one pint of vinegar and one gallon of water, were found in perfect preservation, clean, dry and free from fungus; but the remaining pieces, which were saturated with nitrate of soda, prussiate of potash, acetate of iron, sulphate of iron, common salt and kreosote, presented much decay and a large growth of fungi.

The results obtained from solutions of corrosive sublimate, one-eighteenth of a pound to a gallon of water (Kyan's proportion), varied in an anomalous manner.

The paper was accompanied by specimens of the wood, showing how complete had been the saturation.—*Chemical Gazette, July* 1, 1850.

ON THE GAMBOGE TREE OF SIAM.

By Dr. Christison, V. P., F. R. S. E.

Although gamboge has been known in European commerce for nearly two centuries and a half, and its applications in the arts have been extended in recent times, the tree which produces it is still unknown to botanists.

The late Dr. Graham, in 1836, was the first to describe accurately a species of Garcinia, which inhabits Ceylon, and which is well

known there to produce a sort of gamboge, not, however, known in the ccommerce of Europe. Resting on a peculiarity in the structure of the anthers, which are circumscissile, or open transversely by the separation of a lid on the summit, he constituted a new genus for this plant, and called it *Hebradendron cambogioides*. At the same period the author examined the properties of this gamboge, and found that it possesses the purgative action of the commercial drug in full intensity, and that the two kinds agree closely also, though not absolutely, in chemical constitution.

At an earlier period Dr. Roxburg described, in his *Flora Indica*, another species of Garcinia, under the name of *Garcinia pictoria*, which inhabits the hills of Western Mysore, and which also was thought to produce a sort of gamboge of inferior quality. In 1847 specimens of the tree and its exudation were obtained near Nuggur, on the ghauts of Mysore, by Dr. Hugh Cleghorn, of the East India Company's service; and the author, on examining the gamboge, found it all but identical with that of Ceylon in physiological action, in properties as a pigment, and in chemical constitution. The same plant, with its gamboge was about the same time observed by the Rev. F. Mason, near Mergui in Tavoy, one of the ceded Burmese provinces.

A third species inhabiting the province of Tavoy, and also producing a kind of gamboge, was identified by Dr. Wight in 1840 with Dr. Wallich's *Garcinia elliptica*, from Sylhet, on the north-east frontier of Bengal. Its exudation was long thought to be of low quality; but, although this substance has not yet been examined chemically, it has been stated by Mr. Mason to be, in his opinion, quite undistinguishable as a pigment from Siam gamboge.

It is a matter of doubt whether Graham's character is sufficiently diagnostic to be a good generic distinction. But it was shown by Dr. Wight in 1840, that a well-characterised section at least of the genus Garcinia consists of species which have "sessile anthers, flattened above, circumscissile, and one-celled;" and that all these species, and no others, appear to exude a gum resin differing probably very little from commercial gamboge.

Still the tree which produces Siam gamboge, the finest and only commercial kind, continues unknown. A strong presumption however arose, that the last species was the Siam tree, as it grows in the same latitude with the gamboge district of Siam, and not above

200 miles further west. But if the information recently communicated to the author be correct, the Siam tree is a fourth distinct species of the same section. In December last, he received from Mr. Robert Little, surgeon at Singapore, specimens taken from two trees which were cultivated there by Dr. Almeida, a resident of the colony, and which were obtained by him "direct from Siam," as the gamboge tree of that country. These specimens are not such as to allow of a complete description; yet they are sufficient to show that the plant presents the characters of Wight's gamboge-bearing section of the genus Garcinia; but that it is not any of the species hitherto so fully described as to admit of comparison with it. The fruit is round, not grooved, crowned by a four-lobed knotty stigma, and surrounded by numerous sessile or subsessile aborted anthers, and by a persistent calx of four ventricose fleshy sepals. The male flowers consist of a calx of the same structure, a corolla of four ventricose fleshy petals, and a club-shaped mass of about forty subsessile anthers, closely appressed, connected only at the mere base, one-celled flattened at the top, and opening by a circular lid along a line of lateral depressions; and there is no appearance of an aborted ovary amidst them. These are the characters of the three species presently known. These three species very closely resemble one another in general appearance and special characters. The new species presents the same close resemblance to them all; and, in particular, its foliage is undistinguishable from that of *Garcinia elliptica*, the leaves being acuminate, and leathery, exactly as described and delineated by Wight. But it differs from them all in the male fruit and flowers being peduncled. The male flowers are fascicled, and have a slender peduncle three-tenths of an inch in length. The single young fruit attached to one of the specimens has a thick, fleshy peduncle, like an elongated recepticle, half as long as the male peduncle. All the other species hitherto described, have both male and female flowers, sessile or subsessile. As this difference cannot arise from a mere variation in the same species, the plant must be a new one. The evidence, however, that it produces gamboge, and more especially the gamboge of Siam, is not yet complete, and, until further information on this point be obtained, which the author expects to receive in the course of the year, it appears advisable not to attach to it a specific name. A question may even arise whether the male flowers and

the fruit here described may not bel⌂ng to two species instead of one; but this is far from probable.—*Proceedings of the Royal Society of Edinbugh.*

[Although several months have elapsed since the above paper was read, its value is increased by the following extract of a letter from the author, which accompanied a copy of the paper:—]

"I am now able to inform you further, that the plant described in my paper, 'On the Gamboge Tree of Siam,' is diœcious; that additional specimens confirm all therein stated, and that the concrete juice of which a small portion has been sent to me, possesses all the sensible qualities of the finest Siam pipe-gamboge of commerce. I have no longer any doubt that we have hit on the true tree at last. There may be a shade of question raised whether Dr. Almeida's trees, of which he has three about twelve feet in height, may not belong to more than one species, and, therefore, which of them may be the true gamboge bearer. But I have myself scarcely any doubt that there is only one species. With a little more information, which I expect to have in six or eight months, I shall be in a condition to give a complete account of the matter. But meanwhile it may interest you and your friends to know what has been already done.—*Pharmaceutieal Journal, November* 1, 1850.

ON THE MANUFACTURE OF PYROXYLIC SPIRIT, OR WOOD-NAPHTHA, ACETATE OF LIME, AND ACETONE, OR PYROACETIC SPIRIT.

By Jacob Bell.

Editor of the [London] Pharmaceutical Journal.

Separation of the Liquid Products of Distillation from each other.—The condensed liquid products before described, [resulting from the distillation of wood in iron cylinders] form by subsidence in the tank or receptacle two layers, the lower, composed of tarry and oily matters, and the upper containing the acid and spirituous parts of the products. If two tanks be provided, the one at a lower level then the other, the acid and spirituous liquor passes by means of an overflow-pipe into the lower tank, and thus become separated from the tar; and if the acid liquor in passing from one tank to the other be made to traverse a suitable filter, a large por-

tion of the tarry and oily matters held mechanically in suspension by the acid liquor will be returned.

The next process depends upon the method of working adopted at each particular manufactory; but without individual reference we may class them all under two heads. First, those who distil the pyroxylic spirit direct from the crude acid liquors; and, secondly, those who first neutralize the acid liquors with lime and then distil off the spirit. The first class employ *copper* stills of a capacity of about 500 gallons; into these the crude acid liquor is pumped, and heat applied either by means of steam made to traverse a coil of well-connected copper pipes placed within the still, as at Pitchcombe Works, or the stills are heated externally as at Cwm Avon Works. In the second case sheet-iron stills or boilers are employed, and the previously neutralized acid liquor run into them, and external heat applied as at the Melancrythan and other works. In each case about 100 gallons, or one-fifth of the contents of the still, are distilled off and put by as containing all the pyroxylic spirit, the further distillation and purification of which we shall hereafter speak of. In the first case the remaining acid is next distilled off, and the residuary tarry liquor run off through a cock placed in the lower part of the still; or if distilled acid be not required, the remaining 400 gallons are run off into a suitable tank or reservoir, in which the tar settles to the bottom, and the acid liquor may be drawn off or pumped up for further use. In the second case the remaining 400 gallons of neutralized acid liquor, or acetate of lime solution, is run out of the still, and employed as will be hereafter described.

The tarry product of the distillation of wood is also distilled in copper or cast-iron stills, and the crude spirit obtained therefrom is added to that obtained from the distillation of the acid liquor above-mentioned.

Manufacture of Pyroxylic Spirit or Wood Naphtha.—The crude and weak spirit procured in the distillation before mentioned, is next subjected to repeated distillations in order to obtain the spirit in a more concentrated form, which is then rectified by distillation, first with lime alone, and lastly with a mixture of lime and caustic potash. In some works chalk is employed, and in others lime and bicarbonate of soda. For this purpose copper stills are employed, and steam heat applied either through a coil of lead

pipe placed within the stills, or to the outside of the still, the lower half of which has been previously cased in an iron jacket. The pyroxylic spirit thus obtained is perfectly colourless, and is to be met with in the market of specific gravity varying from 0.870 to 0.8320.

The quantity as well as the quality of the pyroxylic spirit obtained at one works often differs much from that obtained at another works; the kind of wood employed has something to do with this, but management of the process much more. The quantity varies from 1¼ gallon to 2½ or even three gallons per ton of wood employed.

The following Table was constructed by Dr. Ure, with the view of showing the per centage of real spirit in pyroxylic spirit of different specific gravities. The wood spirit employed in the construction of this Table was purified by distillation over powdered quicklime, and was drawn over with the heat of a water-bath at such a temperature that its specific gravity was 0.8136 at a temperature of 60° Fahr.

Specific Gravity	Real Spirit per Cent.	Over Excise Proof.	Specific Gravity.	Real Spirit per Cent.	Over or under proof.
.8136	100.00	...	.9032	68.50	13.10
.8216	98.00	64.10	.9060	67.56	11.40
.8256	96.11	61.10	.9070	66.66	9.30
.8320	94.34	58.00	.9116	65.00	7.10
.8384	92.22	55 50	.9154	63.30	4.20
.8418	90.90	52.50	.9184	61.73	2.10
.8470	89.30	49.70	...	...	underproof
.8514	87.72	47.40	.9218	60.24	0.60
.8564	86.20	44.60	.9242	58.82	2.50
.8596	84.75	42.20	.9266	57.73	4.00
.8642	83.33	39.90	.9296	56.18	7.00
.8674	82.00	37.10	.9344	53.70	11.00
.8712	80.64	35.00	.9386	51.54	15.30
.8742	79.36	32.70	.9414	50.00	17.80
.8784	78.13	30.00	.9448	47.62	20.80
.8820	77.00	27.90	.9484	46.00	25.10
.8842	75.76	26.00	.9518	43.48	28.80
.8876	74.63	24.30	.9540	41.66	31.90
.8918	73.53	22.20	.9564	40.00	34.20
.8930	72.46	20.60	.9584	38.46	35.60
.8950	71.43	18 30	.9600	37.11	38.10
.8984	70.42	16.60	.9620	35.71	40.60
.9008	69.44	15.30			

The following table is by M. Deville, with a view to show the per centage of real spirit in naphtha of different specific gravities at the temperature of 48° 5 Fahr.

Quantity of Water.	Specific Gravity.
00 per cent.	0.8070
10 "	0.8371
20 "	0.8649
30 "	0.8873
40 "	0.9072
50 "	0.9232
60 "	0.9429
70 "	0.9576
80 "	0.9709
90 "	0.9751
95 "	0.9857

"If," says M. Deville, "these results are brought to a temperature of 60° Fahr., it will be found that there is an almost entire correspondence between alcohol and wood spirit, and that the latter equally with the former shows a maximum of contraction, which always takes place on the combination of one part of wood spirit with three of water, that is to say, in a mixture containing 45.75 per cent. of water. Dr. Ure has also constructed a table of the specific gravities of mixtures of wood spirit and water; but he has given 0.8136 as the specific gravity of anhydrous wood spirit, at a temperature of 60° Fahr." In an article on Pyroxylic Spirit and its compounds, which appeared in Thompson's *Records of Science*, vol. ii., page 374, it is stated, "the lowest specific gravity, to which, as far as we are aware, it has been brought in this country, is 0.812. Dumas, however, states that its density at the temperature of 68° is 0.798, and that of its vapor 1.120. Its boiling point, according to the same authority, is 151¾°, at a pressure of 30 inches. Mitscherlich gives 0.798 as its specific gravity, and 180° Fahr. as the boiling point. Mr. Scanlan, in the *Proceedings of the British Association*, 1835, gives .828 as the specific gravity, and 150° as the boiling point. "Wood spirit of 0.870 specific gravity," says Dr Ure, "boils at 144° Fahr., and if it be brought by distillation to specific gravity 0.832, it boils at 140° Fahr." The commercial wood spirit varies very much both as to its specific gravity and its power of dissolving gum sandrac, shellac, &c., from its containing acetone, mesite, &c., in variable proportions. The presence of these bodies is to be accounted for by the variation in the modes employed for obtaining and purifying the wood spirit, as

also by the more or less careful management of the several processes it is made to undergo. The question then naturally arises, how are we to judge of the quality of wood spirit?—will a knowledge of its specific gravity, or of its boiling point, guide us in this respect? If a wood spirit be required for burning in a spirit lamp, or for singeing horses, there can be no doubt but that the spirit of the lowest specific gravity is the best; but if the wood spirit be required for the manufacture of varnishes and polishes, especially those containing gum sandrac, then the above criterion will not apply. For instance, a sample of wood spirit containing 85 per cent. has been far preferred to that of another sample containing 95 per cent. We have invariably found that the wood spirit obtained by liming the crude liquor from the cylinders before distillation, does not dissolve sandrac, whilst that obtained by distilling off the spirituous portion of the crude liquor before liming, is a good solvent of sandrac, the spirit in the first case being of a low specific gravity, and miscible with water, whilst the latter contained less real spirit, and was rendered milky on the addition of water. At one works, upwards of two and three-quarter gallons per ton have been obtained on the average working of nearly 2000 tons of wood; whilst at another, a weekly consumption of 80 tons of wood has yielded only 160 gallons of pyroxylic spirit; and at a third, only 12 gallons have been obtained from 36 tons of wood.

Manufacture of Acetate of Lime.—The commercial acetate of lime is of two qualities, respectively designated grey and brown lime salt; these are obtained by saturating with lime either the distilled acid before mentioned, or the undistilled acid after the pyroxylic spirit has been removed by distillation, and evaporating the clear solution almost to dryness, or by evaporating the solution of acetate of lime as run off from the stills in the case in which the crude acid has been neutralized with lime previous to the distillation of the spirituous product. This saturation either of the crude acid previous to distillation, or the distilled acid, or the undistilled acid, is in either case performed in the same manner. The acid liquor is passed into wooden or iron vessels of convenient capacity, say from 500 to 1000 gallons each, and a quantity of either powdered chalk or of slacked and sifted lime, previously made into the consistence of cream with water, is added until the blue color

of litmus paper is no longer reddened; a slight excess of lime is then added, with a view to render the separation of the oily matters more complete. A portion of the tarry matters are carried to the bottom with the impurities of the chalk or lime employed, and part of the oily matters, combined with the lime, float on the surface, and are removed by skimming. The solution of acetate of lime when clear, is ready for the evaporating pans, which are either wood vessels lined with lead and furnished with coils of wrought iron steam pipes in connection with a boiler, or shallow pans of sheet iron, set over a naked fire—the boiling solution is repeatedly skimmed to remove the tarry matter floating on the surface; and the salt as fast as formed is fished out by means of large skimmers, and thrown into wicker baskets suspended over the pans, so that the liquor draining from the salt may not be allowed to cool. The following practical result was obtained by the use of three sheet-iron pans about eighteen inches in depth, and capable of containing 450 gallons of acetate of lime liquor each:—First six days of 24 hours each, 7020 gallons of liquor were evaporated, producing 78 cwt. of dry acetate of lime. Second week, 8060 gallons were evaporated, producing 92 cwt. of dry acetate. Third week, 7000 gallons were evaporated, producing 78 cwt. of dry acetate. Two of the pans contained brown acetate of lime liquor, and the other grey acetate liquor.

The next part of the process is the drying of the drained acetate of lime. This is usually effected by placing it on the top of the mass of brickwork in which the retorts, or cylinders, or ovens, are set; but as there is seldom room to dry the whole of the salt in this way, many works are furnished with a drying-house in addition, and, where the lime is made on the spot, the waste heat from the kiln or furnace is made available for drying the acetate, it being made to traverse the flues beneath the floor of the drying house. As a general rule, however, the drying of the acetate of lime is a part of the process of this manufacture by no means well executed, requiring as it does, more attention than the workmen are usually disposed to give to it.

Some very good directions have been given by Plücker for the manufacture of acetate of lime, though some of them are not readily practicable on the large scale, and would require more additional labor and fuel than would be compensated for by the extra price to be obtained for the acetate in the market. He recommends the

filtration of the crude acid through layers of saw-dust and gravel before it is neutralized with lime, and that the solution of the acetate having been brought to boil, should be filtered or allowed to stand for thirty-six or forty-eight hours; also that at two subsequent periods of the operation the solution of lime salt should be drawn off from the evaporating pans, and either filtered or be allowed to settle, and the clear liquor further evaporated. As for filtration, that is quite out of the question, but it is certain that much impurity is deposited when the hot solutions are allowed to cool. In works where 10,000 gallons of lime salt liquor are made every week and have to be evaporated, this could not be effected without a considerably increased expenditure of fuel and labor. The following sketch of a drying furnace and of directions for drying the acetate of lime will be found useful.

The drying furnace is a simple wind furnace, seven or eight feet long, and four and a half to five feet broad, built of brick. At six inches above the ground is an ash pit, eight inches broad and twelve inches high, which is covered with a grate of bricks. The fire-place is twenty inches high, and ten inches broad at the grate; over it is an arch of bricks, so that the fire cannot play on and heat very highly the iron drying-plate lying on the side of the hearth. The space below the drying-plate is separated from the earth by a partition of bricks, three or four inches high; twelve inches above the outlet of the hearth there is a layer of iron bars, one and a half to two feet from each other, and upon these is deposited the drying-plate. This consists of cast-iron, one quarter of an inch thick, and is formed according to the size of the furnace. Round the plate the furnace is built up to the height of ten inches, on the side of the front wall, leaving room for doors, which may be calculated at two and a half feet. These doors are two, one above the other, through which the whole interior of the furnace can be inspected. They are formed of plate-iron and have in their middle a sliding door to admit of the exit of the vapour of the acetate of lime, and of some ventilation. A wall built at the end of the plate, or clay partition, separates the whole of the drying plate from the chimney. In the walls of the furnace iron bars are fixed, and upon these bars a second drying-plate, which covers the drying space. This plate, as it does not come in contact with the fire, may consist of good iron or of clay.

Above this drying space another is formed by means of the chimney. The heat passes as well under as above the drying space, and passes into the chimney, which is situated at the side of the furnace, and can be shut by a valve, In the drying space the temperature is usually between 60° and 90° R. (167° to 234½° Fah.

Turf forms the best material for fuel, as it does not burn rapidly, and produces a steady and equal temperature.

Drying of the Acetate of Lime.—When the furnace is thoroughly and equally heated, the flame of the fire is allowed to subside. If wood is employed as fuel, the sliding door should be opened at the commencement in order to allow the moisture to escape. The salt is transferred from the evaporating vessel to the drying plate, and spread out to the depth of two inches ; and after the first portion has become somewhat dry, the depth is increased to four or five inches, the heat is preserved at the degree already mentioned, for twenty-four hours, and during this time the salt is turned several times. Subsequently, when the mass appears to be becoming dry, the temperature may be increased to 100° (257° Fah.), so as to dry it completely. The mass is dry and properly roasted when it possesses the following characters:—It must, before cooling, be brittle, easily crumbled between the fingers, mixed with blackish carbonaceous points or streaks, between which appear white pieces of dry salt. A solution of the comminuted salt, in four or six times its volume of hot water, possesses a yellowish brown color with a dark tinge, while previously it had a reddish brown color. When the heat is increased towards the end of the process, as described, care must be taken to do it gradually so that no smoke shall rise from the acetate, because it might thus be decomposed. Neither must any spark be permitted to come in contact with the acetate of lime ; because, like sugar of lead, it possesses the property, in these circumstances, of catching fire and burning—by which the whole dry preparation would be completely destroyed. The treatment of the acetate of lime in this manner, by means of gradual drying, as experience has shown, possesses many advantages over the method of drying the salt in an open vessel ; because there is no loss of acetic acid, as always occurs by the latter process. The operator has the preparation completely in his power, and with little expense of fuel and time, many hundred weights of salt can be prepared at once. This process does not merely extend to the removal of the moisture

from the acetate of lime, but a chemical influence is exerted by means of it; because it is certain that the substances formed by dry distillation, which have been recently distinguished by Reichenbach, are partly dissipated by the heat, and partly decomposed, the acetate of lime possessing very different properties before and after the process. After the process the salt does not imbibe water so readily as it did previously. After solution, filtration, and evaporation, a much purer product is obtained than before, and upon the filter a resinous matter remains, the constituents of which have not yet been examined.

It will be seen from an inspection of one of the tables given under Part I., that the quantity of acetate of lime obtained from a given weight of wood varies according to the kind of wood employed; it may however be estimated on the large scale as about 140 pounds of brown salt per ton of wood of average dryness, the average result obtained at one works from nearly 2000 tons of wood, and at another from the weekly consumption of 80 tons, being as near as possible that amount; larger products have been obtained, even as high as 150 pounds, but the quantity above stated is a fair estimate of the produce on the large scale.

Manufacture of Pyro-acetic Spirit, or Acetone.—The usual mode of obtaining pyro-acetic spirit is by the decomposition of the acetates by means of heat. For this purpose the acetate is submitted to dry distillation in a retort, great attention being paid to the temperature, which should be kept as low as possible consistent with the decomposition of the acetate employed. The distillation should be conducted with a slowly increasing heat, as the quicker the temperature is raised, the larger is the quantity of pyro-acetic spirit destroyed, carbon remains in the retort, and the empyreumatic oil formed renders the spirit impure. In the case of the metallic acetates, water, acetic acid, and pyro-acetic spirit, pass off in a state of vapor, and are condensed; carbonic acid and carburetted hydrogen gases are the incondensable products, whilst the metallic base, mixed with some carbonaceous matter, remains in the retort. The metallic base is usually reduced to the metallic state, and the more difficult this reduction is, the greater is the quantity of pyro-acetic spirit formed.

Acetates, the bases of which retain carbonic acid at a red heat, produce, when heated in close vessels, the carbonate of the base and

acetone. This takes place, for example, with the acetates of potassa, soda, and baryta. Where the oxide cannot retain carbonic acid at a red heat, as in the case of acetates of magnesia, zinc or manganese, the acetone is accompanied by carbonic acid. If the oxide be easily reducible, as in the acetates of copper, silver, and mercury, there are given off hydrated acetic acid, carbonic oxide, carbonic acid, water, and acetone, and there is left a mixture of the metal with carbon in a minute state of division.

In Thomson's *Inorganic Chemistry*, vol. ii., p. 23, edit. 1831, there is a table of the relative quantity of products obtained from the decomposition of several metallic acetates. The following extract shows the quantity of pyro-acetic spirit obtained :—

Acetate of silver - - - - - - -	0.00
" copper - - - - - -	0.17
" nickel - - - - - -	0.20
" iron - - - - - - -	0.24
" lead - - - - - - -	0.55
" zinc - - - - - - -	0.69
" manganese - - - - -	0.94

The acetates of potash, soda, lime, and baryta yield a much larger proportion of pyro-acetic spirit than any of the metallic acetates, and are therefore generally employed for this purpose, more especially the acetate of lime. It would appear that the acetates of silver and of baryta stand at the two extreme points of the list of acetates in respect to the production of pyro-acetic spirit; the former yielding only a concentrated acetic acid with not a trace of spirit, whilst the latter yields a liquid product almost entirely spirituous, with scarcely a trace of acid. The acetate of copper also yields but a small proportion of pyro-acetic spirit; hence its employment, as we shall subsequently notice, in the preparation of aromatic vinegar.

Dumas submitted to dry distillation 100 parts of acetate of baryta, composed of

Baryta - - - - - -	56.0
Acetic acid - - - - - -	37.4
Water - - - - - - - -	6.6
	100.0

and capable, therefore, of yielding 21.5 per cent. of pyro-acetic

spirit. The result of several experiments gave the following products:—

Carbonate of baryta - - -	72.2
Charcoal - - - - - -	1.2
Pyro-acetic spirit - - -	18.3
Water - - - - - -	6.6
Gas and loss - - - - -	1.7
	100.0

On the supposition that the presence of the charcoal arose from the decomposition of a part of the pyro-acetic spirit, there would be about two per cent. of spirit to be added to the above, which would give near about the theoretical quantity. Taking the product at eighteen per. cent., one cwt. of acetate of baryta should furnish 2¼ gallons of pyro-acetic spirit. Not more than two gallons is obtained from the ordinary acetate of lime of commerce, and the results obtained by operating on some tons of this salt did not give even this amount of produce, no doubt on account of sufficient attention not having been given to the due regulation of the temperature. The acetate of lime was placed in shallow trays of about two feet square and two inches in depth, and fifteen or sixteen of these trays placed over each other in an iron cylinder employed for the distillation of wood. The crude spirit is rectified by successive distillations over quick-lime, when a limpid colorless fluid, specific gravity 0.7921, is produced. It is soluble in water, alcohol, and ether, and burns with a whitish flame.—*Pharm. Jour.*

ON THE ACTION OF MERCURIAL OINTMENT AND THE VAPOR OF MERCURY.

By F. von Bærensprung, M. D.

1. Notwithstanding the daily employment of mercurial frictions, the question of the manner in which the action takes place has but seldom been taken up. The metallic mercury obtained in the blue ointment must necessarily penetrate the epidermis and corium, to come into contact with the blood and the internal parts of the body. Animal membranes are permeable to liquids; mercury is

a liquid; hence there would scarcely be any doubt *à priori* that this penetration is possible. It has already been shown by Bèclard and Krause, that liquid mercury cannot penetrate the epidermis even when subjected to a perpendicular pressure of 26 inches; but the extremely finely-divided state in which it exists in the ointment might possibly present a favorable condition for endosmosis. Hence I first made some experiments with dead animal membranes. A pig's bladder was stretched over a vessel, and blue ointment rubbed upon it for a quarter, half, one, and even several hours; the ointment never disappeared entirely, but there remained at last a tenacious bluish-gray layer on the surface. When the friction was concluded, the under side of the bladder was examined with the microscope; and with a clean piece of gold. Globules of mercury can be readily detected under the microscope in the form of spherical corpuscles, appearing perfectly black and opake by transmitted light, but exhibiting by reflected light a bright white and shining luminous spot. Gold is at least an equally delicate test from its power of forming an amalgam; and a globule of mercury which is barely perceptible to the naked eye produces a distinct white spec upon a piece of gold. In the numerous experiments which were made, however, both methods always yielded a negative result; neither in any case could a trace of the metal be detected between the coats of the bladder on stripping them off; nor was a different result subsequently obtained, whether the friction was performed upon the porous or the mucous surface, or whether a dry or wetted bladder was used, or one impregnated with fatty matter. It was therefore repeated with the more delicate bladder of the calf and sheep; and lastly, with the peritoneal coat of the liver of a calf, a membrane so thin that the smallest print can be read through it; but in this case the piece of gold which had been enveloped in it did not exhibit any spot, nor did the microscope detect any globules.

But the structure of the human skin and that of animals is different from that of the serous and mucous membranes; and it might be considered possible that the mercurial particles were rubbed into the orifices of the hair-cavities, the sebaceous and sudoriparous glands, and were thence taken up into the capillary vessels. But it is incorrect to imagine that the above organs are open canals;

they are perfectly filled with cells, which exactly resemble the cells of the epidermis; moreover direct experiments have proved this view to be untenable. When the friction was made upon a piece of human skin, or that of a cat or rabbit, mercury could never be detected on its inner surface; and microscopic examination showed that the ointment had penetrated into the external orifices of the follicles, but never further into them.

These facts undoubtedly show that the metallic mercury cannot permeate dead animal membranes endosmotically. The laws of endosmose apply equally to dead and living bodies; still it appeared worth while to obtain distinct proof in regard to the latter. ½ a drachm of mercurial ointment was therefore daily rubbed in the skin of a rabbit which had been carefully shaved, until the tenth day, when the animal died with the symptoms of mercurialism. The inner surface of the skin, after having been carefully separated, and the blood and all the more important organs, were most minutely examined; but the result was in no wise different. The same experiment was performed upon several other rabbits, dogs and a cat, all of which shortly died of mercurialism; but in no case could the least trace of metallic mercury be detected in the body.

The ingenious experiments of Autenrieth and Zeller, who first caused the skin to cicatrize over pieces of gold inserted beneath it, and then rubbed mercurial ointment upon it, and on subsequent examination found them unaltered, were long ago attended with the same result; this was however controverted by Œsterlen, who rubbed the ointment into dry membranes and the skin of living animals, and states that he always found numerous globules of mercury, not merely in and under the skin, but in almost all the organs, tissues and secretions. With regard to this point, it must be remarked, that, unless the most scrupulous care be taken in cleaning the hands, the knife, the object-slide, &c., globules of mercury may be found wherever they may be looked for. If we consider, moreover, that Œsterlen also found that powdered charcoal passed by absorption from the intestine into the lacteals, we shall be justified in doubting the accuracy of these experiments, and giving the preference to my experiments.

Since it has therefore been shown that the metallic mercury in mercurial ointment does not pass into the body as such, it re-

mains to be shown in what other manner this passage takes place.

When mercurial ointment is melted in a test-glass, the metal separates from the fat, so that the former constitutes a white layer at the bottom of the glass, whilst the latter forms a yellow supernant liquid; whilst between the two there is a thin black stratum, which appears thinner when recently prepared ointment is used, and deeper when the ointment is old. This is also seen when the metal is separated from the fatty matter by solution in ether. Hence, in addition to metallic mercury and fatty matter, the ointment contains a black substance, the quantity of which increases with its age; it is also a well-known fact, that the ointment gradually gets darker by keeping. It is natural to regard this black matter as protoxide of mercury, the formation of which is favored by the absorption of oxygen occurring whilst the fatty matter was becoming rancid. That this was the case should be proved by the following experiment. Some freshly prepared ointment was treated with ether, the solution poured off; the metallic residue was washed with ether, and then treated with water to which a few drops of sulphuric acid had been added. The acid, which was cold, and very dilute, could not attack the metallic mercury, but would dissolve any oxide which was present. A few drops of solution of sulphuretted hydrogen were added to the filtered solution, when a brown turbidity immediately appeared, which after some hours had subsided in the form of flakes. When, instead of the fresh ointment, some of which had been longer kept was used, the same reaction appeared much more strongly, and a distinct precipitate of sulphuret of mercury was formed.

In another experiment, acetic acid was substituted for the sulphuric acid. The result was the same. *It is thus proved that mercurial ointment contains protoxide of mercury in addition to metallic mercury and fatty matter.**

Donovan and Christison long since asserted this to be the case,

*That finely-divided mercury gradually becomes partially converted into oxide is in conformity with Poggendorff's experiments, according to which the surface of a perfectly pure mass of mercury soon loses its mobility for feeble electrical actions. If the mercury be placed in contact with acid, it reobtains its mobility, which it loses only in gases containing oxygen, not in carbonic acid and hydrogen. See Pogg. Annal., lxxvii. p. 9.

but the younger Mitscherlich rendered it again doubtful. The two former even believed that a fifth part of the mercury was oxidized, which proportion appears far too great in accordance with my experiments; it is moreover possible, that, in addition to keeping, finer trituration might increase the amount of oxide considerably. Guibourt, on the other hand, arrived at the result that only the one five-hundredth of the mercury was oxidized, that it did not exist in a free state in the ointment, but was combined with an acid. To decide this question I tested the etherial solution, which contained the fatty matter of the ointment, by means of a single pair of plates. A strip of sheet copper and of zinc were soldered together at one end in such a manner as to represent in form a tuning fork. When this simple apparatus is immersed in a liquid containing mercury in organic combination, in consequence of the galvanic decomposition the metal is thrown down upon the copper pole in the form of a gray film, which when rubbed upon the copper colors it white. This method has been recommended several times, and is so delicate that it detects one-tenth of a grain of corrosive sublimate in an ounce of a solution of albumen. But no mercury could be separated from the blue ointment by this means.

We must therefore undoubtedly consider the oxide as the active ingredient of the blue ointment. But even the oxide cannot be taken into the body without the aid of a solvent; and this solvent is, in all probability, the free acid of the cutaneous secretion. Both the perspiration and the fatty secretion of the sebaceous follicles exhibit an acid reaction; and, according to Anselmino, the perspiration contains a considerable amount of free acetic acid. The acetic acid dissolves the oxide, and this solution readily transudes through animal membranes and the cells of the epidermis.

If this explanation be true, *the greater part of the mercury contained in the blue ointment is perfectly inactive*, and we ought to be able to form a far more active ointment from the pure protoxide. This can, in fact, be done. An ointment containing ʒj. of the black oxide of mercury to ʒij. of fatty matter, hence as much as the blue ointment contains of metallic mercury, acts as an active poison to animals upon which it is rubbed in, and a scruple of it killed a cat in four days, and a rabbit in twenty-four hours. From some experiments which I made upon some patients with an ointment contain-

ing only 1 gr. of the oxide to ℥j. of fatty matter, I should consider this preparation as about equal in strength and action to the blue mercurial ointment.

The result which we have obtained in regard to the blue ointment may also be extended to a series of other preparations which are made by the trituration of metallic mercury with various sub stances, but are destined for internal administration. Among these are the *Æthiops per se*, the *Hyd. c. Cret.* (P. L.), the *Hyd. c. Magn.* (P. Dubl.), the *Æthiops graphiticus* (P. Sax., *Mercurius gummosus Plenckii*, *Æthiops saccharatus*, *Æthiops tartarisatus Sellii*, *Pil. Hydrargyr.* (P. L.). As metallic mercury is no more able to penetrate the mucous membrane of the intestines than the skin, the action of these preparations can only depend upon the oxide they contain, which is formed by the trituration, and is dissolved by the free acid of the gastric and intestinal secretions. This view was confirmed by a preparation which had been made by triturating 1 part of mercury with 2 of sugar for several hours. When treated with water acidified with sulphuric acid, it yielded a solution which gave a brown turbidity with sulphuretted hydrogen. Most of these preparations have become obsolete on account of their uncertain and feeble action. Moreover, there can be no doubt that the very uncertain action of mercurial ointment does not depend merely upon the various susceptibilities of individuals, but also upon the varying quantity of oxide contained in it; and as individuality always remains an incalculable quantity x, it would be advisable, with a view to obtain the most uniform effects, to substitute for the second x a constant magnitude, and to replace the blue ointment by an ointment containing the protoxide.

II. The poisonous action of the vapor of mercury is well known. Small animals die in an atmosphere of it; and man, when constantly exposed to its influence by his calling, suffers sometimes from coughs and bronchitic symptoms, sometimes from the peculiar mercurial tremors, sometimes from gingival affections, and other phenomena of mercurial cachexy. Although cases of the first kind are attributable to mere local irritation of the respiratory organs, the latter decidedly indicate absorption; hence arises the question, Can the vapor of mercury penetrate animal membranes?

It is well known that a piece of gold suspended over a vessel

containing mercury soon becomes white, in consequence of the evaporation of the latter. If a thin animal membrane be inserted between the two, the amalgamation ought to continue if the membrane allowed the vapors of mercury to permeate it. A glass vessel containing mercury was tied over with a piece of peritoneum, the external surface of the latter coated with leaf-gold, and the whole placed in a warm place. In three weeks the gold had not become amalgamated, nor did it become so when the mercury was heated to ebullition, and the internal surface of the peritoneal membrane was coated with globules of mercury.

This experiment shows, *that mercury does not penetrate animal membranes even in the gaseous state ; hence it cannot be taken up in the living body.* Some experiments made upon rabbits render it probable that the vapor of mercury, when inspired, condenses within the organs of respiration, there becoming oxidated by intimate contact with the air and gradually absorbed.

1. A rabbit was exposed in a capacious box during an hour to the vapor of boiling mercury. When it was taken out, it crawled with difficulty, and its breathing was very quick, but in the course of the day it recovered itself. The next morning it appeared to be in a very great state of uneasiness. It was again exposed to the vapor of mercury for an hour and a half. Soon afterwards it was seized with tetanic spasms, and died at the third seizure. On dissection, the mucous membrane of the trachea and bronchi was found strongly injected, and the bronchi mucous contained globules of mercury. In the lungs, numerous spots of hyperæmia were found; they varied in size from that of a lentil to a pin's head ; also several larger red and gray spots, between which the substance of the lung was in a state of hepatization. By the aid of a lens and the microscope, the nuclei of several of these hyperæmic and hepatized portions were seen to be formed by globules of mercury. This experiment, when repeated several times, always gave the same result.

2. A rabbit was exposed for half an hour to the vapor of mercury. In the course of the day it seemed very dull, did not eat, breathed quickly, and was in a constant tremble ; on the following day it was active, and remained so until the fourth day, when it was killed. The bronchial mucous membrane was unchanged ;

the lungs contained numerous white spots, resembling miliary tubercles, partly surrounded by a hyperæmic line. The microscope detected in the spots granulated cells resembling pus-corpuscles, but no globules of mercury. The other organs were altered as in the preceding experiment.

3. A rabbit was enclosed in a capacious cage, in which a porcelain trough, 1 foot long and 9 inches in breadth, full of mercury, was placed. The temperature of the room was about 30° Fahrenheit. During the first fourteen days no change was perceptible; it then however lost its liveliness, sat in a crouching position, and lost its appetite. It gradually became constantly duller and the respiration quicker: on the twentieth day it dragged its hind legs along; it had a diarrhœa of blackish-brown matter, and on the twenty-second day it was dead. The blood was found loosely coagulated, the stomach and intestines were greatly distended, and the large intestine contained black liquid fæcal matter. The substance of the lung was everywhere compact, and studded with small white spots resembling miliary tubercles and isolated sugillations of the size of a lentil. No globules of mercury could be found.

These experiments prove that the vapor of mercury condenses upon the mucous membrane of the air-passages and in the air-cells of the lungs to globules, there causing inflammation and lobular hepatization; that the mercury subsequently disappears from here; and that after the long-continued action of the vapors of mercury, the phenomena of mercurialization are developed. The experiments have certainly not shown the manner in which the solution and absorption of the globules of mercury take place. We can only assert thus much, that this cannot possibly occur without previous oxidation.

The results to which the preceding experiments have led may be summed up as follows:—

1. Metallic mercury is not capable of permeating animal membranes either in the finely-divided or gaseous state.

2. On triturating mercury with various substances, a small quantity of protoxide of mercury is formed, and this is the sole active constituent of the blue ointment and several other preparations.

3. The action of the blue ointment is uncertain, because the

quantity of oxide contained in it varies according to its age and the mode of preparation.

4. Hence a more uniform and effective preparation can be made from the pure protoxide.

5. Vapors of mercury first produce inflammation of the lungs, subsequently oxidation and absorption take place, and the symptoms of mercurialism commence.—*Jour. für. Prakt. Chem.* No. 9, 1850.—*London Chemical Gazette*, Sept. 1st, 1850.

ON COLD WATER AS A SOLVENT OF THE ACTIVE PRINCIPLES OF DRUGS.

By Mr. Richard Battley.

In the preparation of medicines, there are a few points to which I have especially directed my attention, and to which I shall take this opportunity of inviting your attention, believing that the conclusions to which I have come, suggest the general introduction of a new form of medicine, and of an important alteration and improvement in one now in common use.

1. The superiority of cold to boiling water as a menstruum for nearly all vegetable substances.
2. The quantity of water to be employed.
3. The extent to which the evaporation of the product can be safely and advantageously carried.

1. The object of the various menstrua employed, as hot and cold water, spirit, ether, vinegar, &c., is of course to dissolve the active principles with as little as possible of the inert constituents, which not only do not improve, but often greatly impair the properties of the medicine. I believe I have employed cold distilled water for this purpose far more largely than has been customary in this country or elsewhere; but the Edinburgh and Paris Pharmacopœias have, in their last editions, adopted it to a much greater extent than formerly. The advantages of cold water, that is, of water at the ordinary temperature of the laboratory, say 60 or 65, are, first, that it dissolves from the tissue of plants, in two or three macerations, all or nearly all the active principles soluble in boiling water, spirit, or ether, taking up even resin abundantly

when mixed with gum, the possibility of which, even out of the tissue, was long ago shown by the late Dr. Babington; secondly, that it does not dissipate, but retains the volatile matter; and, leaves behind the starch. Extracts prepared from such infusions are more aromatic, more transparent, more soluble, and less liable to decomposition. If it is objected that the produce is often considerably larger when the temperature is employed, I admit it. So also is the bulk of scammony when adulterated with flour and chalk. But virgin scammony has not a greater superiority over the adulterated drug than has the high flavored, soluble, translucent product of cold maceration over the nauseous, half-soluble, hard, opake, starchy extract produced by boiling.

2. The quantity of cold water is also important. I have been led to adopt as a rule of maceration of most substances, twice their weight of cold distilled water, adding for each subsequent maceration as much additional distilled water as the amount of infusion previously drained off or expressed. To be thoroughly saturated with this small quantity of fluid, the article must be coarsely powdered, bruised, or cut into small pieces, and repeatedly pressed into the fluid with a rammer or with the hand. The specific gravity of the infusion seldom increases after four or six hours maceration. In some cases, as roots, leaves, hop, colocynth, &c., strong pressure is absolutely necessary to displace the fluid: but in the case of barks coarsely powdered, three fifths of the fluid will generally drain off without pressure, if time be allowed. If a larger quantity of water is employed in maceration, the additional matter taken up is chiefly gum and other inactive principles, and the medicine is both weakened and impaired by their addition, and is liable to become further deteriorated by the longer continuance of the heat required to get rid of the superfluous water.

3. To preserve watery extracts and for the convenience of exhibition, it has been customary to reduce them to a pilular consistence. To this there are serious objections. Extractive matter is rendered less soluble by the separation of its water, and by the heat required for its evaporation; and the constituents, by being brought into too close contact, form new and often very soluble compounds, and continue to do so long after the completion of the extract, until the properties and value of the medicine are mate-

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rially changed. To guard against these changes and to preserve the solubility of the extractive matter, I introduced in 1818, the form of Liquor, or inspissated cold infusion, evaporating the cold infusion at a temperature not exceeding 160°, to the specific gravity of 1200, and afterwards, to preserve this liquid extract from decomposition, adding to it as much rectified spirit as will reduce the specific gravity to 1100.

These liquors, of which I have prepared about twenty kinds, have been largely employed for many years, and the constant demand for them may be offered as evidence of the satisfaction they have given, of which satisfaction I have also received from all quarters the most ample assurance.

Believing then confidentally that cold water is capable of producing the most elegant and useful preparations of vegetable substances, I am very anxious to impress on you the conviction to which I have been led by the constant superintendence of the operations of the laboratory, conducted under my own eye, and mostly by my own hands.

Should this form of medicine hereafter be adopted into the Pharmacopœia, it will be found that though the process is extremely simple, much care and attention are necessary to produce the proper result. Above all, the evaporation should be conducted at a temperature not exceeding 160, and continued until the specific gravity reaches 1200, in order to secure the same uniformity in the result, which is obtained by reducing the extract to pilular consistence. The evaporation of the infusions to a definite quantity would have a very different result; for one sample of a drug will often yield to water two or three times as much as another.—*Phar. Journal and Trans. Sept.* 1, 1850.

ON THE INCOMPATIBILITIES OF IODINE AND IODIDE OF POTASSIUM.

By M. Dorvault.

M. Dorvault believes that an enumeration of the chief substances with which *iodine* is compatible may be of service. Among the metalloids, chlorine, bromine, sulphur, and phosphorus, and

among the metals, antimony, copper, lead, mercury, bismuth, silver, and gold, combine with iodine, and give birth to compounds in which its dynamic action is more or less modified. To the above may be added, with the same remark, those with which soluble iodides are formed, as iron, manganese, and zinc. Among the incompatible chemical compounds are ammonia, with which it produces an explosive compound, and sulphohydric and cyanhydric acids, which it decomposes, transforming itself into iodhydric acid. Nitric acid oxidizes it. Moist sulphurous and arsenious acids, brought into contact with it, become super-oxygenated while it is hydrogenised. It gives various results with the metallic oxides, properly so called, but usually produces insoluble iodides. From sulphates it liberates the sulphur and siezes the metal. From the salts of antimony, copper, mercury, silver, &c., it forms insoluble iodides with their metals. Almost all organized substances may be considered incompatible, in consequence of the tendency which this body has to sieze the hydrogen, giving rise to various compounds, of which iodhydric acid almost always forms part. Yet the iodine taken in this form into the economy retains in a great measure its dynamic action. Thus for the purpose of moderating the irritating action of iodine, or the salts of morphia, belladonna, &c., are often added; and experience teaches us, that in spite of the incompatibility of the alkaloids with iodine, the action of this substance is obtained. Still there can be no doubt that its activity is diminished from this cause.

The metals already named also produce insoluble iodides with *iodide of potassium*. If the iodine is in small quantities, potash is produced, and a double iodide if in large. The salts of these metals give rise to a double decomposition, producing a soluble salt of potassa, and an insoluble iodide. *Organic* incompatibilities are much less frequent than in the case of iodine, as the avidity which this substance has for combination is already satisfied with the potassa. Apart from the acids, as the citric, acetic, and tartaric, there are not any organic substances manifestly incompatible with the iodide of potassium.

By reason of the incompatibility of silver with iodine and iodide of potassium, pills should never be silvered, nor should medicine be administered by means of silver spoons.

Some of the reactions may occur in the system itself, if the iodine be ingested or applied soon after other medicines chemically incompatible with it, and *vice versa;* and in some instances, the system remains impregnated for some days with the prior medicine. All those bodies which have the power of becoming localized in certain organs, and those which stagnate in the economy by virtue of their combination with its protein elements, among which are mercury, antimony, arsenic, &c., give rise to this phenomenon. Thus, if we give a preparation of iodine after a mercurial salt, we salivate. So, too, by external friction with iodine, after the use of mercurial ointment, or the *Empl. Vigo*, vesication of the skin is induced. In both cases iodide of mercury has formed, and beside this, caustic potass. Ignorant of this, many persons order a combination of iodide of potassium and mercurial ointment, whereas when the action of the two is required, we should employ the iodide of mercury, or associate the iodide of potassium with mercury already in a state of combination as a salt.

In some cases, the production of incompatible compounds by the administration of preparations of iodine, fulfils a well-defined therapeutical indication, as when they are given in the case of metallic poisoning.—*Bull de Thèrap.*, tom. xxxviii, pp. 414-7.—*Med. Chir. Rev.* July, 1850.

ON COLOCYNTHINE.

By Mr. William Bastick.

It must be a matter of surprise that the active principle of the pulp of the *Cucumis Colocynthis*, a drug in such extensive use and so highly esteemed, should not have received from Chemists a more complete examination to establish its true character. The medical prescriber might find in it an eligible agent when desirous of administering a powerful purgative in various concentrated forms.

It is to be regretted that it has been never submitted to ultimate analysis, consequently its precise composition is unknown. It is, probably, an *oxyhydro-carbon* analogous to the resins, although dif-

fering from them in several of its properties, so as to induce the belief that it is a body *sui generis*.

Colocynthine is more soluble in water than resin; it is, like them, highly inflammable. It is an oily fluid at a temperature below the boiling-point of water, of a pale yellow color; but at an ordinary temperature it solidifies into a reddish-brown resinous body. When dissolved in weak acids and alkalies, it separates unchanged upon the evaporation of the solution. It is not volatile when isolated, as might be supposed from the experience of those who have been engaged in preparing extract of colocynth, although in any form it is intensely bitter.

Colocynthine possesses neither basic nor acid properties, although Vauquelin and others have assumed to the contrary, having obtained a precipitate in its aqueous solutions by some metallic salts. But this reaction most likely arose from the colycynthine not being absolutely pure on which they experimented, as I do not find that it is thus effected when prepared according to a process which I have devised and found unobjectionable. Moreover, this method of preparation is incompatible with the existence of such a property.

The process I recommend is as follows:—Exhaust with successive portions of cold distilled water the pulp of colocynth previously freed from the seeds, until the pulp is deprived of its bitterness; filter the solution, and heat it to the boiling point; add, whilst hot, diacetate of lead, until no further precipitation ensues; when cold, filter, and to the clear liquid add diluted sulphuric acid carefully as long as a precipitate is thrown down; again boil to remove the free acetic acid, and filter to separate the sulphate of lead. By this means all the organic matter, except the colocynthine, is removed. Evaporate the filtrate cautiously to near dryness, and dissolve the colocynthine out of the residuum by means of strong alcohol, which leaves the salts undissolved as sulphates. By evaporating the alchoholic solution the colocynthine may be obtained pure.

This process is more complex than those recommended by Vauquelin and Braconnot; but, nevertheless, it is easy of execution. Colocythine dissolves in strong sulphuric acid, but evidently is at the same time decomposed. The solution is dark brown, and upon being diluted with water a precipitate of a carbonaceous nature is

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formed. The acid seems to deprive the colocythine of the elements of water.

Nitric acid produces a reaction with it that is analogous to the resins. It dissolves readily in cold nitric acid of the specific gravity 1.450, and after a few moments a vehement reaction ensues, attended with the evolution of great heat and fumes of nitrous acid, which shows that this body is oxidized when thus treated.

By mixing a moderate quantity of water with the acid solution, a voluminous precipitate is formed, which is redissolved by the addition of more water. This precipitate, when separated by a filter from the liquid and washed with ice-cold water to remove the excess of nitric acid is found to have the characteristics of a weak acid (colocynthic acid ?) It seems to be the only product of the oxidation of the colocythine when thus conducted, although other bodies, doubtless, are formed by continuing the process of oxidation under the application of heat. This acid is of a pale yellow color and bitter taste, but infinitely less bitter than colocynthine. It is inflammable, but not explosive. It is soluble in water, alcohol, and ether, and separates by evaporation from its solutions in an uncrystalline condition. With ammonia, potash, and soda it produces soluble compounds of a reddish-brown color, but also uncrystallizable. It combines with the earths and metallic oxides, forming insoluble or slightly soluble compounds.

Dr. Gregory has suggested that colocynthine is probably a mixture of organic bodies; but my investigation of its properties, as here detailed, does not seem to support this opinion.—*Pharm. Jour. Nov.*

VARIETIES OF LINT.

By Jacob Bell.

Editor of the [London] Pharmaceutical Journal.

Lint, as its name implies, is (or ought to be) prepared from linen. The course of preparation which it undergoes is intended to remove the harshness of the surface, rendering it soft, and suitable for application to wounds, as well as more absorbent.

Ordinary, or old-fashioned lint, of which there are several qualities, is usually made from old shirts, sheets, or other linen rags of

various kinds, which are collected for the purpose, and constitute an extensive branch of trade with the "rag and bottle dealers."—These rags are washed several times in soft soap and water, sometimes boiled with soda or pearlashes, and afterwards rinsed, first in blue water and lastly in clean water. Chloride of lime is, we believe, used by some lint makers to bleach the rags, but this is injurious to the texture and quality, and is avoided by the best makers, who depend entirely on soap and soda as detergents.

The rag, being well cleansed and dried, is next prepared by means of a machine resembling the framework of a small table without a top. To the back is fixed with a hinge, a lever, supported by a spring, and extending to the front, at which extremity it is furnished with a knife resembling a chopper, about eighteen inches long. The lever is alternately depressed by a string attached to a pedal, worked by the foot, and raised by the spring before mentioned. At each depression the knife impinges on the front of the frame, on which a strip of stout leather is attached. The rag is wound round a roller, and the edge of it brought forward on the leather under the knife. The knife is depressed, and at the same moment the rag is pulled back about the eighth of an inch. On the rising of the knife the rag is pushed forward to receive the next stroke, and the operation is repeated until all the fibres in one direction have been cut sufficiently to produce the desired surface. This operation, although it appears simple, requires some skill and experience, for unless all the fibres are cut uniformly, the surface will not be smooth, and if the knife be brought down with too much force the rag would be cut through. At this stage of the process the lint when well cut appears remarkably soft and fluffy, but not quite smooth. The ragged edges are then trimmed, the lint is mangled or passed through rollers, and carefully folded in packets for sale.

We have been favored with information on these practical details by Mr. Oyler, of No. 2, York Street, Camden Town, who is an extensive manufacturer of lint of the old kind, of every degree of fineness, from cambric to common sheeting. Of the cambric lint, of which Mr. Oyler gave us a sample, thirty-six yards (of eighteen inches wide) go to the pound, of the ordinary lint about four and a half yards, or when very thick and coarse, only three or

four yards. The qualities most desired in lint are softness, a smooth surface, and moderate thickness. It should tear readily in one direction, and hold firmly in the other. Some lint will tear also across the grain, and this kind is preferred by Surgeons for the pocket case, as it is convenient to be able to dress small wounds without using scissors. For general purposes it is sufficient that it tears in one direction. When required for dressing wounds and ordinary hospital practice, rather thin lint is preferred, but for the application of lotions or for other purposes, where absorbing qualities are desirable a thicker lint is better.

We have stated that lint is, or *ought to be*, prepared from linen. The lint is more absorbent and less irritating to an abraded surface. Although cotton lint is not unfrequently sold, either mixed with linen or substituted for it, a lint maker who has a character to lose would run the risk of injuring his business by indulging in the practice, and he loses no opportunity of reminding his customers that his lint "has not a bit of cotton in it." Cotton being much cheaper than linen, is used chiefly on this account by those who push their trade by "underselling," and take advantage of the inexperience of their customers in judging the quality. The linen rags collected for the manufacture of lint vary in texture, size, shape, and other qualities. Consequently, notwithstanding the care which is taken in the selection, there is scarcely to be met with a parcel of lint, even of the best quality, absolutely uniform. When the retailer has an order for a pound of large lint of a particular description, he must occasionally break open four or five pound packets to accommodate his customer. The source whence the old rags are derived has also been considered objectionable by persons who are at all fastidious; on which account various attempts have been made to introduce as a substitute a fabric of uniform texture and quality made on purpose. Hence the origin of several varieties of patent lint which have lately been in circulation. Of these we have before us

Tosswill's Patent Lint (two qualities, one finer than the other.)
Tipton's Patent Lint.
Wackerbath and Ross's "Superior Golden Flax Lint."
Taylor's Patent Lint (two kinds.)
Patent Lint, manufactured by the "National Linen Company."

Some of these lints are composed of linen, others of cotton. In order to give practical value to our description of each variety, we have furnished samples to two Metropolitan hospitals for trial, and hope to be favored with reports in time for our next number, when we intend to resume the subject.

It is probable that the above list may not include all the varieties which are in the market. If this be the case, we shall be glad to receive such information as may enable us to complete the investigation, it being our object to give a fair and impartial report of every kind of lint which is manufactured.—*Pharm. Jour.*

ON THE COMPOSITION AND METAMORPHOSES OF CONINE.

By J. Blyth.

The recent analytical results of this chemist do not accord with those already obtained by M. Ortigosa. The difficulty of obtaining the alkaloid in a pure state is such that it is not easy to deduce a reliable formula except from the analyses of its saline combinations. From a careful comparison of the results, M. Gerhardt is led to obtain the formula already adopted by him in his Precis (vol. ii, p. 66) $C_8 H_{15}N$, or in the ordinary notation, $C_{16}H_{15}N$; that of Mr. Blyth is $C_{17}H_{17}N$, and that of Ortigosa $C_{16}H_{16}N$, neither of which gives a number of equivalents of nitrogen and hydrogen divisible by 4. The results obtained by M. Ortigosa approach very closely to those calculated from M. Gerhardt's formula.

According to Mr. Blyth, the boiling point of conine is 168°–171° C.; but it is altered by heat so that the temperature rises during the distillation. Its density is ·878. It is volatile at ordinary temperatures, giving off a pungent odor which affects the eyes and produces white fumes with nitric, hydrochloric and acetic acids. In a dry state it does not affect test papers, but on the addition of a drop of water its reaction is strongly alkaline. Conine readily coagulates albumen, and precipitates the salts of Cu, Pb, Zn, Mn, Al and Fe, it precipitates also nitrate of silver but an excess of conine dissolves the precipitate; it dissolves the chloride of silver as readily as ammonia. Most of the salts of conine are decomposed by evaporation, leaving gummy residues: many of these are crystallizable as the hydrochlorate, but very deliquescent.

Conine is a very alterable substance and resinifies by the action of the air; the ordinary product of its oxydation is ***butyric acid***, which is obtained from it in various ways,—by boiling a solution of the chloroplatinate, by acting upon it with an excess of bromine and evaporating in the product *in vacuo*, by chromic and nitric acids, etc. According to M. Gerhardt the reaction will be as follows $C_8 H_{15}N + 2H_2 O + O_2 = 2C_4 H_8 O_5 + NH_3$.

Mr. Blyth supposes a simultaneous formation of carbonic acid which his formula demands.—*American Journal of Science and Arts, Sept.* 1850.

ON THE USE OF SULPHURET OF ARSENICUM AS A DEPILATORY.

By M. Felix Boudet.

The numerous cases of poisoning in which arsenic has been used caused the legislature, in 1845 and 1846, to impose certain restrictions upon the sale of this substance. In the latter year, a royal ordonnance interdicted under severe penalties,

1st. The sale of arsenic and its compounds for other purposes than its use in medicine, unless in combination with other substances.

2d. The sale and use of arsenic and its compounds for the steeping of grain, the embalming of bodies, and the destruction of insects.

In consequence of these wise measures, the retail sale of arsenious acid has been suppressed, and this terrible poison, which not long since was in the hands of every agriculturist, is no longer entrusted to such hands. Science has bestowed a great benefit in depriving the perpetrators of crime of this formidable weapon. But there are other arsenical products almost equal in power to arsenious acid, which are still in use, such as the sulphurets of arsenic.

One of these, under the name of *orpin*, is used in a particular process for preparing sheep-skins. This is not orpiment, as its name would seem to indicate, but artificial or false realgar, which, according to Guibourt, contains one-and-a-half per cent. of arsenious acid, and is a tolerably active poison.

The other, under the name of ***yellow sulphuret of arsenic***, enters

into the composition of indigo vats, and forms one of the constituents of depilatory powders and paste. This is the yellow arsenic or false orpiment, which is prepared in Germany by subliming arsenious acid with sulphur. It contains 94 per cent. of arsenious acid, and only six per cent. of sulphuret of arsenic. It is almost as poisonous as the arsenious acid itself. The annual importation of these two sulphurets into France, exceeds 660,000 pounds weight.

In the dressing of skins, the use of orpin has only been intro duced during the last twenty years. It causes the wool to be detached from the skin, without plunging it into a bath of lime, as was the practice formerly, and in this respect it has been found very serviceable.

Having had occasion to direct my attention to some applications of chemistry to the art of tanning, and to substitute soda for lime in that process. I was also led to enquire into the use of orpin. It has appeared to me, for some time past, that this subject involved an important consideration in a sanitary point of view.

The poisonous properties of sulphuret of arsenic, the facility with which it has been obtained by retail consumers, the great quantity of it which, in Paris, has been daily poured into the river Bievre, are circumstances calculated to create serious inquietude. Indeed, I have lately heard from M. Bussy, that in 1846, whilst making some experiments relating to a Report to a Commission of Health, he had obtained arsenical stains by Marsh's apparatus, from the mud procured from the bottom of the river Bievre, and also that of the Seine, taken from beneath the bridge of Austerlitz. It is much to be desired that the sulphuret of arsenic could be replaced, as a depilatory, by some other less dangerous agent.

Hitherto the depilatory processes had not been submitted to any scientific investigation; and if, according to Berzelius, we ought to attribute the effects of the mixture of lime and sulphuret of arsenic to the solubility of the skins in caustic alkali, this question, upon which doubt is thrown by this illustrious Chemist, leaves unexplained the preference given to the above mixture over the use of lime alone.

I had, therefore, to ascertain which was really the depilatory agent, and whether the arsenic performed an important part in the process.

In order to solve this problem, I examined separately the proper-

ties of each of the compounds which might exist or be produced in the mixture of sulphuret of arsenic, lime and water, which was applied to sheep-skins for the purpose of removing the wool; and I then discovered that neither the lime, nor the arsenious acid, nor the sulphuret of arsenic had any notable influence on the result, but that this depended on the action of nascent sulphuret of calcium formed by the reaction of lime on the sulphuret of arsenic.

I proved, indeed, that sulphuret of calcium acts powerfully as a depilatory when employed alone, and that it partakes of this property in common with the monosulphurets of sodium, of barium, and of strontium.

These observations naturally suggested the substitution of sulphuret of sodium, or hydrosulphate of soda for the sulphuret of arsenic, the former having been already introduced as as a therapeutical agent, and especially in the fabrication of mineral waters and sulphur baths. This new agent succeeded beyond my hopes, and gave more rapid results than the orpin itself; so much so that only a few hours after its application to a sheep-skin I could without effort detach the wool in a single piece.

Nothing, could, therefore, be easier than to substitute sulphuret of sodium for sulphuret of arsenic in depilatory processes. The expense of the process would not be thereby increased, and both with reference to the health of the workmen engaged in making, powdering and applying the orpin, and the security of the public who are interested in restricting the use of substances which might be productive of poisonous effects, such a substitute would be very desirable.

Encouraged by this first success my attention was directed to the depilatory powders and pastes, which are extensively used in the East, and not unfrequently in France, for removing superfluous hairs.

The Turkish *rusma*, and the depilatories of Plenck, of Colley, and of Delcroix, may all be described as mixtures in different proportions of lime and sulphuret of arsenic, to which some add gum, and others starch, and sometimes a little caustic alkali; and these preparations are applied to the skin after being made into a paste with a little water.

These means do not always answer the intended purpose well, and their adoption is subject to serious evils.

In fact, the yellow sulphuret of arsenic being, as has been stated little else than arsenious acid, the application to the naked skin of so energetic an agent cannot be free from danger. Even the preparation of these depilatory powders is fraught with danger, as it is generally performed by persons wholly unacquainted with with chemical or pharmaceutical knowledge.

But my investigations have shown that in all these depilatories, as well as in those used by the leather dressers, the arsenious acid has no influence in promoting the required effect, which might be more rapidly and certainly produced by the use of a paste of sulphuret of sodium and lime than with any one of the arsenical compounds which have been hitherto used.

The following is the formula which I propose :—

Take of

Sulphuret of Sodium, or Hydrosulphate of Soda, crystalized	3 parts	
Quick Lime, in powder - - - -	10 "	
Starch - - - - - - - - - - -	10 "	Mix.

This powder, mixed with a little water, and applied over the skin, acts so rapidly as a depilatory, that if it be removed in a minute or two after its application, by means of a wooden knife, the surface of the skin will be entirely deprived of hair. By this process the removal of the hair becomes so simple, rapid, and safe an operation, that it will probably supercede the use of the razor in many cases. Hitherto, the tediousness and uncertainty of the process, and above all the poisonous properties of the agents employed as depilatories have greatly limited their use, but it is easy to foresee the numerous cases to which a process made easy and safe might be applied. Independently of the advantages which it presents in the removal of superfluous hair, may it not be of great service to medical men and surgeons in connection with the application of blisters or epithems, and also in certain operations ?

It may be applied to parts the most delicate as well as irregular, and to surfaces either limited or extended, and it is only after several days that the hair begins to reappear.—*Journal de Pharmacie*, and *London Pharm. Trans*. Oct. 1, 1850.

ON THE PREPARATION OF SUGAR OF LEAD WITH PYROLIGNOUS ACID.

By G. Schnedermann.

The pyrolignous acid employed for the manufacture of sugar of lead ought to be tolerably free from empyreumatic substances in order to yield a good product. The manufacturers of pyrolignous acid furnish (often under the name of muriate of lead) a product which is very brown by these empyreumatic admixtures, and which is prepared by saturating rectified pyrolignous acid with litharge. In dyeing and printing, sugar of lead is chiefly used for the preparation of acetate of alumina; but as impure sugar of lead is prejudicial to the more delicate colors, pure sugar of lead, prepared from alcohol vinegar, can alone be employed for these, as well as for chrome-yellow, chrome-orange, &c.

Prof. Schnedermann, of Chemnitz, has discovered a method by which the sugar of lead may be obtained from pyrolignous acid in a sufficient state of purity for dyeing purposes. The rough pyroligneous acid is rectified in the usual manner, then super-saturated with slaked lime, and exposed to the air for twenty-four hours, during which time the mass is to be frequently stirred up. By the excess of lime, a great part of the empyreumatic matter, which forms with the lime a more or less brown and insoluble combination, is precipitated. The exposure to the air is necessary, because the empyreumatic matters become more oxydized, assume a deeper color, and become fitted for combining with lime. The brown solution of the acetate of lime is then separated in a suitable manner from the precipitate, and heated to boiling, when small quantities of a clear solution of chloride of lime are successively added as long as the liquid continues to become paler. After evaporating to dryness, the yellowish-gray residue, which consists of acetate of lime, with a small proportion of chloride of calcium, is decomposed by sulphuric acid. If the acetic acid be intended to be obtained by distillation from this mixture, the sulphuric acid must be diluted with an equal volume of water.

In other cases, the sulphuric acid is not at all to be diluted, or only very slightly so, and added gradually to the decomposed residue, to avoid the generation of heat. The mixture is left standing for a short time; it is then to be diluted with water, and the clear

liquid drawn off from the gypsum. In this case it is not advisable to previously dilute the sulphuric acid with water, as the gypsum then assumes a crystalline loose condition, subsides with difficulty, and contains much fluid.

In both cases the acetic acid contains a small quantity of muriatic acid, also sulphurous acid; and, in the latter case, also a small proportion of gypsum. Oxyde of lead is now to be added, and heat applied till the acid reaction is feeble. The precipitate retains sulphurous acid from the gypsum, and also sulphate of lead, and chloride of lead. The solution of the acetate of lead yields a yellowish sugar of lead, containing a small quantity of chloride of lead, but which is generally sufficiently pure for dyeing purposes, and can be still further purified by recrystallization.—*Pharm. Journal, from Dingler's Polyt. Journal* and *Pharm. Central Blatt*, 1850, p. 317.

MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

At a stated meeting of the Philadelphia College of Pharmacy, held Ninth month 30, 1850. Present seventeen members. Daniel B. Smith, President, in the Chair.

The minutes of the Board of Trustees informed that the degree of graduate in pharmacy, had been conferred on the seventeen graduates of 1849 and 1850, and that an address had been delivered on the occasion, by Professor Bridges. Edmund A. Crenshaw has also been elected a resident member.

The Committee on the Adulteration of Drugs, not being prepared to make a final report, are continued.

The Committee on the Revision of the Pharmacopœia, reported that they had attended to the remaining part of their duty, and forwarded the result of their labors to Washington, to be submitted to the National Convention. The Committee are discharged from the further consideration of the subject.

The delegation appointed to represent the College in the National Convention, held at Washington, to effect the Revision of the United States Pharmacopœia, reported they all attended, that the Report of the Committee of Revision was duly presented, and that the influence of the Philadelphia College of Pharmacy was felt in the Convention.

The Committee on the Cabinet of Specimens made the following report, and were released from further attention to the subject:

"That since their last communication, they have expended the appropriations made at that time, as will be seen by the annexed statement, and that they have filled up all the glass ware with specimens, chiefly those of materia medica, without any cost to the College. The Committee believe that a small appropriation, to be devoted to the purchase of a further supply of glass ware, would be attended with advantage, as they believe many more valuable specimens, especially chemicals, can be obtained without cost, if appropriate places of deposit were in the cases. The Committee now ask to be discharged, believing, that the further enlargement of the Cabinet, and the expenditure of the appropriation, should the College think proper to make it now, or at a future time, can be as well made by the Standing Committee on the Cabinet.

SAMUEL F. TROTH,
WILLIAM PROCTER, JR.,
On behalf of the Committee.

Ninth Month, 30th 1850."

The expenses of the Committee being submitted, they were on motion ordered to be paid.

On motion of Ambrose Smith, the Board of Trustees are requested to take measures for exchanging specimens of native plants and materia medica with foreign pharmaceutical societies.

The College proceeded to the election of eight trustees. Alfred B. Taylor and Jacob L. Smith, were appointed tellers, who represented that the following members were unanimously elected, viz :—

Thomas P. James,
Jacob L. Smith,
Alfred B. Taylor,
John Harris,
Wm. J. Jenks,
Joseph Trimble,
Charles Bullock,
Henry C. Blair.

Then adjourned.

DILLWYN PARRISH, Secretary.

Varieties.

Californian Quicksilver.—It is not improbable that gold may be found to constitute but a small proportion of the wealth derivable from California. It has for some time past been known that quicksilver abounds in that locality to an enormous extent. About twelve months ago a capitalist embarked with the requisite machinery for working a mine, and the result has more than realised his most sanguine expectations. On his return to England in quest of additional machinery, we are informed that he found a letter from the great Rothschild—the present mercury monopolist—requesting an interview with him in London—for what purpose it is easy to guess. We believe this request was not acceded to. The reports respecting the extent of the supply in the new mines are almost incredible. We have been informed that within a few weeks of the commencement of operations by the party alluded to, assisted by five men, a quantity of mercury was raised equal in value to £100,000 at the present market price. Even allowing a large discount for exaggeration, there is no reason to doubt that the supply is almost unlimited, and that the metal can be profitably sold at less than half its present price. The silver mines in Mexico, which have for years been unproductive, on account of the prohibitory price of mercury, may now be supplied on reasonable terms, and every branch of trade and manufacture in which mercury is used, will acquire a similar stimulus.—*Pharmaceutical Journal, November* 1, 1850.

Consumption of Spirits in Great Britain.—According to a return recently made, the total number of gallons of proof spirits distilled in the United Kingdom during the year ending January 5, 1850, was 24,775,128, distributed among the three kingdoms thus:—England, 5,573,411 gallons, of which 5,362,600 were from malt with unmalted grain, 17,337 from sugar or molasses with unmalted grain, 13,931 from sugar, and 176,533 from molasses; Scotland 10,846,634 gallons, of which 6,058,086 were from malt only, 4,788,548 from malt with unmalted grain; Ireland 8,355,883 gallons, of which 85,756 were from malt only, 8,047,077 from malt with unmalted grain, and 222,250 from sugar or molasses with unmalted grain. The number of gallons of proof spirit on which duty was paid for home consumption in the United Kingdom was 22,962,012, the total amount of duty being £5,747,218 1*s*., distributed as follows:—England, 675,036 gallons from malt only, 8,166,226 from malt mixed with unmalted grain, 14,740 from sugar, and 171,052 from molasses; total, 9,053,676 gallons, on which £3,546,023 2*s*. duty was paid, at the rate of 7*s*. 10*d*. per gallon; Scotland 4,950,736 gallons from malt only, 1,984,115 from malt mixed with unmalted grain, and 152 from sugar; total, 6,035,003 gallons, on which the duty at 3*s*. 8*d* per

gallon amounted to £1,271,417 4*s.* 4*d.*; Ireland, 452,468 gallons from malt only, 6,404,770 from malt mixed with unmalted grain, 112,308 from sugar or molasses with unmalted grain, and 3,787 from sugar; total, 6,973,333 gallons, yielding at the rate of 2*s.* 8*d.* per gallon, an amount of duty equal to £929,777 14*s.* 8*d.*—*Pharmaceutical Journal, July* 1, 1850.

Runge's Chrome Ink.—Runge's chrome ink, which consists of the neutral chromate of potash, and an extract of logwood, becomes, according to Stein, perfectly permanent, and of a more intense black color, by the addition of a few drops of a solution of corrosive sublimate.—*Pharmaceutical Journal, June* 1, *from Pharm. Central Blatt,* 1850, *No.* 12.

Ready Method of preparing Helenine. By W. Delffs.—When the fresh root of *Inula Helenium*, cut in slices, is exhausted with boiling alcohol of 0.833 spec. grav., and the hot filtered solution is mixed with from 3 to 4 times its bulk of cold water, a slight turbidness results; and after twenty-four hours, dazzling white needles, several inches in length, of pure helenine, will be found in the liquid. The mother-liquor retains so little helenine, that it is scarcely worth while evaporating it. The experiment also succeeded with the dried root which had been kept for half a year, but the produce appeared to be smaller. The root employed for these experiments had been collected towards the end of October.—*Chemical Gazette, October* 1, 1850, *from* Poggendorff's *Annalen,* 1850, No. vii.

On the Detection of Strychnine. By A. W. Brieger.—The reaction of substances containing much oxygen upon strychnine is very distinct with pure chromic acid, far more so than with the bichromate of potash, first recommended for the purpose by Otto. By means of this reaction it is possible to detect strychnine when mixed with santonine, brucine, &c. But several substances prevent the appearance of the violet color more or less, for instance pure or acetate of morphine; quinine renders the color pale rose-red; sugar conceals the reaction.—*Ibid, from Jahrb. fur Prakt. Pharm.* xx. p. 87.

On the Constitution of Styracine. By Dr. A. Strecker.—I recently advanced the view, based upon the experiments of M. Toel, that styracine is a compound of *cinnamic acid* with the *alcohol of cinnamic acid* (styrone.) All the facts related by M. Toel and the analyses of the different products, agree well with the formulæ proposed by me, with the exception of the analyses of styracine, which in part at least accord better with M. Toel's formula. To get information on this point, I prepared some styracine, and obtained it perfectly pure by repeated crystallization from alcohol and ether. It possessed all the properties ascribed to pure styracine by M. Toel. After drying over sulphuric acid, it was burnt with chromate of lead, when it gave—

Carbon	81.47	81.37	36	= 216	81.82
Hydrogen	6.09	6.06	16	16	6.06
Oxygen	. .	. .	4	32	12.12

The slight loss in carbon was to be expected in the combustion of a substance so rich in carbon, unless oxygen were employed; the principle object however was an accurate determination of the quantity of hydrogen, which according to the formula $C^{30} H^{14} O^{3}$ should amount to 6.42 per cent. I think therefore that the formula $C^{36} H^{16} O^{4}$ for styracine may be considered as established.—*Chemical Gazette, August* 15, 1850, *from* Liebig's *Annalen*, April, 1850.

Note on Scillitine. By L. F. Bley.—The author has obtained scillitine in a crystalline state, according to Lebourdais's process, by treating the aqueous extract of squills with animal charcoal. The author treated the extract of 16 oz. of squills with 12 oz. of purified animal charcoal, without any application of heat; the solution lost entirely its bitter taste. The dry charcoal was now exhausted with hot alcohol, and from this solution a small quantity of scillitine was obtained by spontaneous evaporation in long flexible needles.

The temperature at which the solution of the scillitine, from which half the alcohol had been removed by distillation, was evaporated, did not exceed 77° F. At a higher temperature it was obtained at first in oily drops, which congealed to a wax-like mass, and could not be subsequently crystallized. It must consequently have experienced some alteration, for the solution of the crystalline scillitine is neutral, and renders water turbid when added to it in drops, whilst that of the non-crystalline is acid, and does not render the water turbid.—*Chemical Gazette, July* 15, 1850, *from Archiv. der Pharm.*, lxi. p. 141.

On the Presence of Iodide of Cyanogen in Commercial Iodine. By T. Klobach.—The occurrence of iodide of cyanogen in commercial iodine had been previously noticed by F. Meyer. The author likewise observed crystals of this compound in the first crop on the sublimation of 80 lbs. of iodine. It was distilled with mercury to remove the free iodine, when 12 oz. of iodide of cyanogen, in beautiful crystals, were obtained.—*Chemical Gazette, April* 15, 1850, *from Archiv. der Pharm.*, lx. p. 34.

The Salts of Morphia.—M. Mialhe, of Paris, is of opinion that opium, either in the shape of extract or tincture, ought to be entirely discarded from practice, as the proportion of active principles in this drug is extremely uncertain, both from natural causes, and through adulterations. He has found that in the various kinds of opium of commerce, morphia varies from seven grains and a half to eight scruples per three ounces and a half; or in other words, from one-half to ten per cent. In adulterated specimens—namely in a substance that merely imitated opium—he has found only six parts of morphia in 5000. M. Mialhe infers that morphia alone should be used in medicine, and that this principle should drive away opium, as quinine has replaced bark—*Boston Med. and Surg. Jour., November* 6, 1850, *from London Lancet.*

The Artesian Well of Bavaria.—A correspondent of the National Intelligencer, writing from Paris, says, "The famous Artesian well at Kissengen, in Bavaria, commenced eighteen years ago, and which it was feared would have to be abandoned as a failure, has just given the most satisfactory results. The town is located in a saline valley, 984 feet above the level of the Baltic sea. Last June, the boring had reached a depth of 1837 feet, and several layers of salt, separated by a stratum of granite, had been traversed, when carbonic acid gas, followed again by granite, was found. Finally, on the 12th inst., at a depth of 2067 feet, perseverance was rewarded by complete success. A violent explosion burst away the scaffolding built to facilitate the operations, and a column of water four and a half inches in diameter spouted forth to the height of 98 feet above the surface. The water—clear as crystal—is of a temperature of 66 Fahrenheit, and is abundantly charged with salt. It is calculated that the product will be upwards of 6,000,000 lbs. per annum, increasing the royal revenues by 3,000,000 florins, after deducting all expenses."—*Boston Med. and Surg Journal, November* 27, 1850.

Prussiate of Potash in Asthma.—It is understood that much relief has been obtained from the use of prussiate of potash in the paroxysms of asthmatic breathing. The dose, during a paroxysm, is one teaspoonful of a saturated solution. The principle upon which its remedial properties are based, is that of its being an arterial sedative. It is a ferro-cyanuret of potassium, and probably the hydrocyanic acid is the medicant after all.—*Ibid.*

On Kermes Mineral as an Antidote to Strychnia. By M. Thorel.—M. Thorel, taking advantage of the practice of the municipal authorities in destroying stray dogs periodically by means of strychnia and nux vomica, instituted some experiments upon the antidotal power of kermes, having already observed the reactions which ensue on bringing a sulphuret in contact with strychnia. Although dogs commencing to exhibit the symptoms of strychnia poisoning cannot, if they have been fasting, be made to vomit even by large doses of tartar emetic; yet by combining with it some kermes, free purging and vomiting are produced, and if the space of time has not been too prolonged the animal recovers. He believes that the instances in which he tried it justify him in recommending, that in cases of poisoning by strychnia in the human subject, the following dose should be given:—*Kermes* 15 grains, *Tart. Emet.* gr. 1½, water and syrup of buckthorn, 2 oz. A second or even a third may be given.

A series of chemical experiments lead him to the conclusion that the action of the substance is twofold. A portion is decomposed, and forms, with the strychnia existing in the stomach as a lactate of strychnia, an insoluble sulphuret, while the undecomposed portion aids the tartar emetic in inducing expulsive action.

MM. Bouchardat and Gobley, reporting on this paper, regard it as of some importance. They observe, however, that experiments out of the body show that the iodated iodide of potassium (*iodure de potassium iodurée*) exerts a far more powerful effect in precipitating an absolutely insoluble compound with

strychnia, than kermes does. The relative efficacy of the two substances can only be tested by experience: the experiments on animals require to be extensively repeated, lest we may be deceived by exceptional circumstances. It is possible that all the advantages in M. Thorel's arose from the evacua- which were induced by the antimony and buckthorn.—*The British and Foreign Medico-Chirurgical Review, July*, 1850, *from Journal de Pharmacie et de Chimie*, 8 Sér., xvii, pp. 185-91.

On the destruction of the Odor of Musk by Camphor. By M. Fleischmann.—The fact of musk, when mixed with other substances (as *sulph., antim., aurat.*, syrup of almonds, wax, &c.,) almost entirely losing its odor, has often been observed; but the attention of M. Fleischmann has been recently more particularly drawn to the subject, by his finding that a powder, composed of musk, camphor, and sugar, lost its odor after mixing. Repeating the experiment, he found that, as often as camphor was commingled with musk, it exerted this effect upon it; so, too, when musk was given with an oleo-saccharum, as cinnamon, &c., its odor became lost.—*Ibid from Buckner's Repert.*, Band iv. p. 262.

Adulteration of Quinine.—Stresemann has observed adulterations of quinine with from 30 to 40 per cent of salicine; Sckeyde, with from 10 to 18 per cent of sugar and milk: and Winckler, with 40 per cent of chalk.—*Ibid from Liebig's Report*, p. 475.

On the Saffron of the East. By X. Landerer, of Athens.—On the Continent, as well as on the islands of the Archipelago, the stigmata of *Crocus Spruneri, sativus, vernus, luteus,* and *variegatus* are gathered and sold as saffron (*Safora.*) In the whole of Greece, about 30 to 40 pounds are annually gathered of it; but much more is brought from Macedonia and Thracia, where the saffron is said to be taken from the *Crocus aureus*, but mixed with the petals of *Crocus* and *Calendula*. It is sold in the bazaars of Smyrna, Thessalonica, and Gallipolis, a large quantity of saffron, about 30,000 litres annually, is brought by Persian small dealers to the so-called Misir-bazaars in Constantinople, *i. e.* the bazaars where all the products from the interior of Asia Minor, from Egypt, and from the Caucasus are sold.—*Pharmaceutical Journal, October* 1, 1850.

On a Compound of Iodine and Codeine. By T. Anderson, M. D.—The compound of iodine and codeine, which formed the special subject of this communication, is obtained by mixing together alcoholic solutions of equal quantities of codeine and iodine, and leaving the mixture to spontaneous evaporation, when the new compound is deposited in crystals. The compound is insoluble in water, sparingly soluble in cold alcohol, but readily in boiling, and it is again deposited in small triangular plates as the solution cools. Its crystalline form has been determined by Prof. Haidinger of

Vienna, who finds it to belong to the doubly oblique system. The crystasl have a fine diamond lustre and a deeply purple color by reflected, and ruby-red by transmitted light. In powder, its color is cinnamon brown.—*Chem. Gaz., September* 15, 1850.

Examination of Castoreum. By F. Woehler.—(Ann. der Chem. und Pharm., lxvii, 360.) The author had already suggested the existence of *phenol* in this substance, and has been able to verify it by distilling the castoreum with water, when a small portion of an oily liquid having all the reaction of phenol was obtained. The residue of this distillation yielded crystals of *benzoic acid* and *salicine*, and the mother liquid from the crystals of the benzoic acid gave with ferric salts the reactions of *salicylic acid.—Silliman's Journal, September*, 1850.

On Testing Opium. By G. Reich.—In testing opium to discover the proportion of morphine and narcotine which it contains, the author proceeds in the following manner:—About 100 grains of powdered opium are triturated with one ounce of spirit of wine of 78°, and digested in a glass vessel for several hours at a moderate heat, and the liquid filtered whilst hot. The digestion is then repeated with half an ounce of the same spirit, and the liquid again filtered whilst hot into a beaker-glass, containing a solution of carbonate of ammonia (twenty grains in sixty grains of water.) The liquid having been covered with a plate of glass, is to be left undisturbed for twenty-four hours, when crystals will have formed on the interior of the glass. When examined by the microscope the crystals are found to consist of four-sided rectangular small prisms, small pearly scales and needles, and four-sided prisms. The crystals, therefore, are a mixture of morphia, narcotine, and meconate of ammonia. They are to be collected on a filter, the meconate of ammonia removed by repeated washing with distilled water; the crystals, together with the filter, dried on the funnel and treated with absolute ether, by which they are deprived of the narcotine. The morphia remains on the filter, and the narcotine is obtained by spontaneous evaporation of the etherial solution. By this method the author has discovered in opium 1.8 per cent of morphia and one per cent of narcotine.—*Pharmaceutical Journal, July* 1, 1850.

Congelation of Protoxide of Nitrogen and Alcohol. By M. Despretz.—A portion of protoxide of nitrogen in the fluid state being poured into a platina capsule placed on a brick, under the receiver of an air-pump, became, by the first few strokes of the piston, covered with a white stratum, and was quickly converted into a snow-like mass of white substance. In a similar manner alcohol, mixed with protoxide of nitrogen, solid carbonic acid, and ether, was solidified, although imperfectly.—*Boston Medical and Surgical Journal, November* 6, 1850, *from L'Union Médicale.*

On Cod-liver Oil in Phthisis. By M. Duclos.—M. Duclos thus sums up the results of his experience with this substance. 1. The presence of fever

is what we must chiefly attend to, relying more on this remedy when it is absent, and less when it is present. 2. The remedy frequently arrests the progress of the disease when only in the first stage. 3. It rarely arrests it when in the second stage, although it may retard it. 4. The third stage is not favorably influenced by the oil. 5. The oil should be administered for a considerable time; and, if a good effect results, it should be suspended awhile, to be again resumed. Thus, it may be given for two months, and then suspended for a fortnight, resumed for a month, and re-suspended for a fortnight again, so as gradually to reduce the length of the intervals during which it is given. 6. The clear, slightly smelling, nearly tasteless oil, is less efficacious than the brown, thick, strong oil.—*British and Foreign Medico-Chirurgical Review, October*, 1850, *from Bull. de Thérapeutique*, xxxviii. p. 490.

On Linseed Oil in Hæmorrhoids. By M. Van Ryn.—M. Van Ryn believes, that, in general, surgical treatment is too hastily resorted to in this affection, and he wishes to bring under the notice of the profession a remedy he has found of great efficacy during twenty five years. It consists in the administration of two ounces of fresh linseed oil every morning and evening; and so rapid is the amendment generally, that the remedy is seldom continued longer than a week. Sometimes the stools are somewhat increased in quantity, but neither vomiting nor any other ill effect is produced. The only precaution the while, is the abstinence from alcoholic drinks and too stimulating a diet.—*Ibid, from L'Union Médicale.*

Method of hardening Objects in Plaster of Paris, and rendering them like Marble.—Take 2 parts of stearine, 2 parts Venitian soap, 1 part pearlash, and 24 to 30 parts of solution of caustic potash. The stearine and the soap are cut into slices, mixed with the cold ley, and boiled for about half an hour, constantly stirring. Whenever the mass rises, a little cold ley is added. The pearlash, previously moistened with a little rain-water, is then added, and the whole boiled for a few minutes. The mass is then stirred until cold, when it is mixed with so much cold ley that it becomes perfectly liquid, and runs off the spoon without coagulating and contracting. Before using this composition, it should be kept several days well covered. It may be preserved for years. Before applying it to the objects, they should be well dusted, the stains scraped away, and then coated by means of a thick brush with the mass as long as the plaster of Paris absorbs it, and left to dry. The coating is then dusted with leather or a soft brush. If the surface has not become shining, the operation must be repeated.—*Archiv der Pharm.*, lvi. p. 327.

Process of Engraving upon Ivory.—The process used to cover ivory with ornaments and designs in black consists in engraving in the ivory itself, and then filling in the designs with a black hard varnish.

To obtain finer and more regular designs, the ivory is to be covered with the common ground, and by means of the point the designs are engraved upon it. They are then eaten in by a solution formed as follows:—

Fine silver	- - -	6 grms.
Nitric acid	- - -	30 "
Distilled water	- -	125 "

At the end of about a half-hour according to the depth to be given, it is to be washed with distilled water and dried with bibulous paper. The design is then exposed for an hour to the solar light, and the layer of wax is removed by essence of turpentine.

The design has then a black color or a dark brown, which blackens entirely at the end of one or two days. Other colors may be produced, by replacing the solution of nitrate or silver by a solution of gold or platina in *aqua regia*, or of copper in nitric acid.—*Chem. Gaz. July* 1, *from Revue Scientifique*, xxxv. p. 433.

Show Colors for Druggists' Shop Windows.

BLUE.

No. 1.—Sulphate of copper ℥j, sulphuric acid ʒss, water ℥x.

No. 2.—Ammonio-sulphate of copper, ammonio-nitrate of nickel (see No. 5) and water.

No. 3.—Prussian blue gr. x., oxalic acid gr. xx., water ʒxvj.

No. 4.—Dissolve nickel in diluted sulphuric acid, add ammonia in excess, and dilute with water.

No. 5.—Dissolve nickel in diluted nitric acid, add ammonia in excess and dilute with water.

GREEN.

No. 1.—Sulphate of copper ℥ij, chloride of sodium ʒiv, water ʒxx.

No. 2.—Dissolve ℥j of nickel in ℥vj of nitric acid, and add Ov of water.

No. 3.—Dissolve nickel in dilute sulphuric acid, and dilute with water.

No. 4.—Dissolve sulphate of copper in water and add bichromate of potash until the required color is produced.

No. 5.—Dissolve ammonio-sulphate of copper in water, and add bichromate of potash until the required color is produced.

No. 6.—Dissolve sulphate of copper in water, and add nitric acid until the required color is produced.

No. 7.—Dissolve distilled verdigris with acetic acid, and dilute with water.

LILAC.

No. 1.—Dissolve zaffre (impure oxide of cobalt) in hydrochloric acid, filter, and add carbonate of ammonia in excess; to this add ammonio-snlphate of copper until the required color is produced.

No. 2.—Dissolve zaffre in hydrochloric acid, filter, and add carbonate of ammonia in excess; to this add ammonio-nitrate of nickel (see *Blue*, No. 5) until the required tint is produced.

ORANGE.

No. 1.—Dissolve bichromate of potash in water until the required tint is produced.

No. 2.—The same as the last, but adding some oil of vitriol or hydrochloric acid.

PINK.

No. 1.—Dissolve ℥ij of zaffre in ʒvj of hydrochloric acid, filter, add solution of carbonate of ammonia in excess; then add f℥j of liquor potassæ, and dilute with water, to produce the required color.

No. 2.—Nitrate of cobalt may be used, with carbonate of ammonia, in the same way as the last.

PURPLE.

No. 1.—Sulphate of copper ʒj, carbonate of ammonia ℥jss, water Oijss.

No. 2.—The last color, with a small quantity of the *Pink* No. 1.

RED.

No. 1.—Macerate powdered cochineal in spirit of hartshorn, and dilute it with water.

No. 2.—Dissolve carmine in solution of ammonia, and dilute it with water.

No. 3.—Wash the best madder two or three times with cold water, then macerate it in solution of carbonate of ammonia, filter the solution, and dilute it with water.

No. 4.—Dissolve madder lake in solution of carbonate of ammonia.

VIOLET.

Ammonio-sulphate of copper, diluted with water, and enough of the pink color No. 1 to produce the required tint.

YELLOW.

Bichromate ofpotash ʒvj, carbonate of potash ℥iv, water ℥xvj.

Pharmaceutical Journal August 1, 1850.

Syrupus Iodidi Ferri. By Mr. Tizier, Apothecary.—As the King and Queen's College of Physicians in Ireland have introduced this valuable therapeutic agent into their newly established formulary, I would be glad to record a few practical points of interest attached to its preparation, for the purpose of simplifying and completing the process, especially as they appear to have been overlooked in the details of every prescribed formula since its first introduction into notice by Dupasquier.

The new Dublin pharmacopœia directs "to introduce the Iodine, iron and water, into a glass flask, and apply a *moderate heat* until the solution loses its red color." Now, as the great success of the first part of the process depends on the rapidity with which it is conducted, without any unnecessary exposure to the air (but what cannot be avoided) until a neutral solution be affected, there is evidently considerable time lost, and danger of decomposition in-

curred by pursuing these directions. This circumstauce appears more remarkable, when we are aware that all extraneous application of heat is superfluous. Iodine and iron exert so powerful an affinity for each other in the presence of water, as to combine with the greatest facility, generating a large amount of sensible heat; at the same time it is only necessary then to to bring their particles *constantly in immediate contact with each other*, to fulfil this end to our entire satisfaction, and for this purpose, two practical points must be attended to, first, to *rotate* the flask containing the mixed substances briskly and diligently for some moments in the hand, until the deep red color of the solution disappears, and is succeeded by its olive-green pellucid and normal one, which, when tested, should be perfectly permanent to the action of amidine. And, secondly, to break down the iron turnings as small as possible, carefully freed from any adhering oxide, by which means a greater superficial extent is exposed to chemical action, and thus ensure rapidity of combination more easily.

By careful attention to these apparently insignificant points, the preparation, in its first stage, will be divested of much of its practical difficulty, and rendered easier of execution, while risk from decomposition will be entirely obviated. Care should be taken to filter the solution (after testing it) into the saccharine mass, which preserves the neutral iodide of iron so far as to preclude the possibility of change from any subsequent heat that may be employed.—*Pharmaceutical Journal, November* 1, 1850.

Red Color for Paper Hangings, &c.—It is proposed to employ the red chloride of chromium for the production of an intense red-violet color, possessing metallic lustre, proper for printing or staining paper.

This product is prepared, as is well known, by passing a current of dry chlorine gas over a mixture of powdered charcoal and calcined oxide of chromium, inclosed in a glass tube. Attention must be especially given in this operation to the fact that, by reason of the difficulty of volatilization of the product, the chloride prepared by a first operation remains mixed with the powdered charcoal. It is therefore requisite to submit this mixture of charcoal and chloride of chromium to a second operation, taking care to cover the bottom only of the glass tube with it, in which case the product will be sublimed in the upper part of the tube. The heat of an Argand lamp, the flame of which is brought gradually upon the tube, will suffice for the formation of the chloride, which soon appears in the form of brilliant micaceous peach-colored spangles. The chloride is then ground in a mortar, and thickened with a mucilage of gum. On being laid upon paper, it will display its original color, and will resist the action, not only of acids and alkalies, but also the direct action of the solar rays.—*Ibid, June* 1, 1850, *from Newton's Journal*, April, 1850.

Editorial Department.

Our Journal.—In presenting the present number to our readers we take occasion to remind them of our promise in the last one, to enlarge the future issue. It will be seen that the page has been increased in dimensions without rendering it necessary to alter the size of the binding. The Varieties have been set in smaller type, and the whole typography made more compact.

Several original articles intended for this number were not received in time for insertion, but will appear in our next.

We have received several specimens of the wood, bark, leaves, and fruit of the "Sassy bark" tree of Western Africa, from Dr. McGill of Cape Palmas through the kindness of Moses Sheppard, Esq., of Baltimore, and hope to be able to present the results of the examination, to which we are now submitting the bark, to our readers in the next issue.

We will be glad to receive from any of our Cincinnati friends an account of the progress of their College of Pharmacy; and also information respecting the cultivation of Peppermint and the distillation of its volatile oil, as conducted in Ohio.

We will feel indebted to any of our readers in St. Louis, for information relative to the castor oil culture manufacture and trade as conducted in Illinois and other parts of that section of country.

College of Pharmacy at Boston.—We learn through the *Medical and Surgical Journal* of Boston, that the Apothecaries of that city have taken steps preliminary to the institution of a College of Pharmacy. It appears that the recent prosecution of Mr. Wakefield for an error in compounding a prescription, has awakened both professions to the necessity of giving a more thorough education to the persons in whose hands the practice of pharmacy is, and will in future be placed. There are none of us but can learn something new daily, if an ordinary share of observation is extended to what is going on around us in the shop. The apothecary or chemist has an extensive field for the range of his perceptive faculties, and when these are on the alert errors should be "few and far between." It is the want of a proper training of these faculties with a view to his daily duties, based on the knowledge acquired by the study of good books, illustrated by his preceptor or the lecturer, that gives rise to the numerous illy qualified apothecaries, even in our large cities. If a boy is placed with a master carpenter with a view to his becoming a proficient, he is expected meanwhile to be taught mensuration, draughting, and other theoretical and practical studies, unless he has previously learned them, and without which he would continue always a journeyman—a mere automaton. It is the union of the rules of

mensuration and skilful draughting, brought to bear on the mere mechanical parts of his business, together with a sufficient knowledge of the materials with which he works, that distinguishes the true master carpenter—the builder—the architect—he who unites gracefulness of outline and utility of object in the construction of our private and public edifices. So it is with the pharmaceutist; it is not merely in the use of the pestle and mortar, the balance and weights, the spatula and measure glass that he is to be skilful; these and the other practical details are as necessary to him as the use of the jack-plane, the chissel, and the square, are to the carpenter; but he should be familiar with the laws and materials of chemistry that he may mix correctly and avoid incompatibilities; he should be well read in the sciences accessory to pharmacy, that he may *know* that he is not selling Belladonna for Hyoscyamus, or potatoe starch for the fecula of the Maranta, and not risk his reputation on the probable accuracy of those who sell him drugs; and lastly he should be versed in therapeutics to detect the errors of physicians when they happen to prescribe wrong articles or inordinate doses.

A special education, then, adapted to his profession, all will admit, is as necessary to the pharmaceutist as to the builder—it is a sense of this fact that has aroused our Boston brethren to the laudable course they have commenced and in the accomplishment of which we heartily wish them success.

The following is a notice of the proceedings of a meeting of the apothecaries of Boston and its vicinity, called at the suggestion of Dr. George Stevens Jones, acting Editor of the *Medical and Surgical Journal.*

"In accordance with a previous notice, a large number of the apothecaries of Boston and vicinity met at the house of Dr. George Stevens Jones, on Friday evening, Nov. 29th, 1850. The meeting was organized by the choice of Wm. B. Little, chairman, and S. R. Philbrick, Secretary.

Dr. Jones being called upon, stated the object of the meeting, viz., to consider the establishment of a Pharmaceutical College in Boston. He mentioned in detail the importance of such an institution, and the advantages to be derived from it; he considered it entirely practicable—that it would not be dependent upon Boston or Massachusetts for its support, but upon New England. Remarks were then made by Mr. Wm. Brown, Mr. Thayer of Cambridge, Mr. Spaulding, Mr. White, followed by many others, all of whom gave their full concurrence in the utility of such an institution. Mr. H. D. Fowle addressed the meeting upon the necessity of united action in the matter—he believed that protection to the community, to the physician and to the legitimate apothecary, all demanded that pharmaceutical education should be raised to some fixed and higher standard.

It was then voted that a committee of five be appointed to confer with the apothecaries generally in Boston and vicinity, upon the subject before the meeting.

Voted, that Messrs. H. D. Fowle, A. Boyden, H. Thayer, A. Brown, and S. R. Philbrick, constitute that committee.

Voted, that this committee be authorized to procure at the expense of the meeting, a Hall or other place for the next meeting.

Much enthusiasm prevailed during the meeting; and but one opinion seemed to exist. All concurred in the belief that such an institution is necessary, and that it will be established—that while New England leads in

almost everything besides, she shall not always be second in furnishing means for properly educating so responsible a class of men as her apothecaries.

It was then unanimously resolved that the thanks of this meeting be presented to Dr. Jones for his able and well-directed efforts in this matter, and also for so generously throwing open his house for this meeting.

At a late hour the meeting was adjourned to Friday, Dec. 13, 1850, at 3 o'clock, P. M. S. R. Philbrick, *Secretary*."

Shaker's Extracts.—A member of "the United Society (of Shakers) at New Lebanon, N. Y., has sent to us some samples of medicinal extracts prepared at their establishment, desiring our opinion of their merits. Although we have no disposition to covet *presents* of this kind for any value they may have intrinsically; nor yet because we are desirous of assuming the troublesome, and often difficult task of deciding on the relative or positive merits of pharmaceutical preparations; we nevertheless are not unwilling to give a portion of time and labor to their consideration when our examination may prove servicable to our readers, or may tend to improve the quality of articles largely consumed. It is of no import to us in whose hands the preparation of extracts may fall, provided they are well made from the best materials. The Society of Shakers have long been engaged in the preparation of medicinal extracts, in connection with their other business of collecting medicinal plants, and the amount of their extracts consumed annually, is if we are rightly informed. very considerable; hence any improvement that can be affected in their processes will be a general benefit, to the extent of the consumption. In a recent number we noticed several of the products of the Messrs. Tilden & Co., and referred to their having introduced the vaccuum apparatus, on a large scale, in the manufacture of extracts. Following the example of these gentlemen, the Society of Shakers have provided their laboratory with a vaccuum evaporator, and the extracts now submitted to our notice are a portion of its first fruits.

The *extract of conium* has a brownish green color, its consistence is hardly firm enough. Mixed with a strong solution of potassa the odor of ammonia and conia are at once developed, and the latter in sufficient force to indicate a fair extract. It would have been improved had the juice been developed and the latter in sufficient force to indicate a fair extract. It would have been improved had the juice been deprived of chlorophylle before evaporation. Recent observations (see page 73) show conclusively that the salts of conia are decomposed gradually during evaporation; hence too much care cannot be observed in conducting the inspissation of the juice. Nor should the plant be gathered before or after the season most favorable to the developement of the activity of the leaves. This is considered to be when the flowers are fairly developed on the terminal umbels Mr. Brande considers the extract of the leaves superior to that of the whole plant. The most critical point in the evaporation of hemlock juice, according to Dr. Christison, is when it attains a syrupy consistence at which period with a heat of 212° Fah., ammonia is given off together with a modified odor of conia; and in proportion as the ammonia is

evolved the extract is deterioriated. If the manipulators of the "United Society" will attend to these hints, as to season of collection, and will remove the albumen and chlorophylle from the juice before evaporation in their vaccuum apparatus, they will be able to produce an extract decidedly superior to the one now examined, although this is greatly superior to much that is in the market.

The *Extract of Stramonium*, except in containing the chlorophylle and albumen, and in being rather too soft, is an excellent preparation. We are aware that many apothecaries prefer these extracts of juices to be green, and look upon the greenness of the color as an index of the careful preparation of the extract; but it is contrary to the pharmacopœia to retain those substances, and well conducted experiments by M. Solon, has proved the green coagulum formed in the juices by heat to be nearly inert, hence their presence only tends to enfeeble the proper extract.

The *inspissated juice* of Belladonna has a more herbaceous and less narcotic odor than the English, and contains the chlorophylle, but in other respects it appears carefully made. We are unprepared to speak of its therapeutic value as compared with the English extract.

The *Extract* of Belladonna, is a different article from the evaporated juice. We are not informed whether it is made from the dried plant with water, or from the recent plant with the assistance of the same solvent. Its odor is different and less powerful than the preceding, and evidently is not the officinal preparation.

The four remaining samples were *Extracts of Dandelion*. The first of these has a brown waxy colour, good consistence and the peculiar sub-bitter taste of the root. It was prepared by mixing the ground fresh roots with a portion of alcohol, expressing out the spirituous juice, and evaporating in vacuo, at 120. It is one of the best samples of Extract of Dandelion we have seen.

The *second* extract was prepared wholly from the fresh herbaceous tops, has a green colour, and sharp bitter taste. We do not know how it compares in medicinal qualities with the extract of the root, for which, however, it should not be substituted without an understanding with the prescribers.

The *third* extract was made by macerating the ground fresh roots in hot water, evaporating to a syrup in vacuo, and finishing in the open air. It was a fair preparation, but not so good as the first.

The last specimen was brown and transparent like treacle, and so sweet that the presence of sugar might be suspected. As it was said to be carefully made, the roots must have undergone some change to have yielded such a product. It had the appearance and taste of an extract made by long boiling except that the colour was too light.

It is one of the principal features of a well qualified manufacturing pharmaceutist to be acquainted with the chemical constitution of the substances he manipulates with, to know which of their constituents are valuable and to be desired in the products, and the relations of solvents, and physical agents to those constituents. For this reason, in most cases, we think a regularly educated pharmaceutical chemist the fittest person to be engaged in this

branch of industry. Yet in reference to that section of the extracts, which are made from recent plants, the position of botanical gardeners is so favorable as to give them great advantages, assuming them possessed of the requisite knowledge, skill, and apparatus. We have confidence in the business integrity of the "United Society" as far as their experience goes; but we believe they need more chemical knowledge, especially more of that which relates to the preximate principles of plants.

Dictionnaire des Alterations et Falsifications des substances Alimentaires, Medicaments et commerciales, avec l'indication des meyens de les reconnaitre. Par. M. A. Chevallier, Pharmacien, Chemist, Professor, &c. Tome premier. Paris, 1850. pp. 470.

The above is the title page of the first part of a work on sophistications, etc., by M. Chevallier of the School of Pharmacy at Paris. This volume extends from A. to K., inclusive, and professes to point out the deteriorations and adulterations of substances, used in medicines, for food, and in the arts; with the means of detecting them. We have not given the volume before us a very thorough examination; but after having carefully read over a number of the articles and glanced at numerous others, we cannot withhold the expression of satisfaction. Like all books which treat on this subject, however, there is much in it that is of little value to the investigator. In fact, there are many substances, the subjects of adulteration, that seem entirely beyond the skill of the chemist, whose best efforts will hardly be able to ascertain their presence, much less specify their character. Many of the adulterated essences and extracts, come under this head. In reference to substances which are capable of proximate analysis, very full and distinct means are suggested for the detection, and sometimes for the isolation of the sophistications. We will notice it more critically when the remaining portion has made its appearance.

Chemical Experiments, Illustrating the theory, practice, and application of the science of Chemistry, and containing the properties, uses, manufacture, purification, and analysis of all inorganic substances, with numerous engravings of apparatus, &c. By G. Francis F. L. S.. etc., etc. *A new and improved edition.* Philadelphia, Daniels &. Smith, 1850. pp. 250 octavo.

The above volume, under the modest title of Chemical Experiments, presents an unusual amount of interesting and instructive information. It is a combination of the abstractly scientific, the useful, and the amusing. Without any claims to a regular treatise on Chemistry, and therefore not intended as a text-book to the regular student, it nevertheless will be found useful by him, owing to the great variety of experimental illustrations it offers. But to the amateur chemist, to the man of general knowledge desirous of information on chemical subjects, and especially to the apothecaries' apprentice, and to the apothecary himself, the book will prove a valuable store-house of facts. The apparatus and manipulations are extensively illustrated by wood cuts.

Review of Chemistry for Students. Adapted to the classes taught in the principal Medical Schools of the United States. By John G. Murphy, M. D. Philadelphia, Lindsey & Blakiston, 1851. pp. 328, 12 mo.

This little volume has been written to facilitate the labors of the medical student. Chemistry is one of his stumbling blocks and as a general rule is less thoroughly acquired than the branches more specially medical. The design of Dr. Murphy is to aid the teacher collaterally and the student directly. The slight examination that we have been able to give it, has impressed us favorably as to its usefulness for the purpose intended. It is well printed on good paper, and got up in a style creditable to the publishers.

Labels for Pharmaceutical Specimens.—The Label Committee of the Philadelphia College of Pharmacy have prepared and will shortly publish a set of labels for specimens of nearly all the preparations of our pharmacopœia, and of many that are not officinal. These labels correspond with the set for Materia Medica specimens published last year. Lecturers on Materia Medica and Pharmacy, Physicians who have private classes of students, and students themselves who are collecting cabinets for their own purposes, will find these labels a useful and ornamental addition to their collections; giving uniformity to their appearance. As the Latin and English names, and the strength of the preparation, in many instances, are indicated, much informationis conveyed by them.
